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PREFACE.

THERE is always a satisfaction in bringing any undertaking to a successful termination, and the Editor, on revising the last sheet of the present volume, imagines his feelings to be very much akin to those of a ship's captain who, after a voyage of many months, has just brought his vessel safely into port.

But while congratulating himself that no harm has come to the ship, he cannot forget that the enjoyment of the passage has in a great measure been due to the good fellowship of the passengers, who have one and all contributed to make the voyage a pleasant one, and who, keeping a good "look out ahead," have enabled the captain to make valuable entries in the ship's "log-book."

Pleased with the success of the last cruize, the owner desires to give notice that the vessel will once more be "put into commission" for another voyage next year, under the same captain, and will sail from the well-known dock in Hatton Garden on the 1st of January next.

It is hoped that as many as possible of those who were passengers on the last trip will not only repeat the voyage, but will also induce some of their friends "to take berths," and accompany them.

The "passage-money" remains as heretofore, and may be remitted to Messrs. WEST, NEWMAN & Co., 54, Hatton Garden, while all communications touching the Zoology of the voyage may be directed, as before, to the address given on the wrapper.



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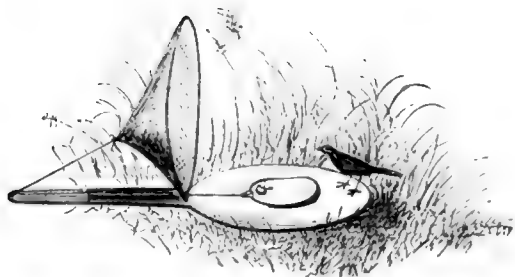
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ON THE MIGRATION OF THE COMMON JAY.

BY JOHN CORDEAUX.

SEEN in the depth of our woodlands furtively flitting from tree to tree, or quietly stealing from the corner of a cover as the noisy line of beaters advances, the flight of the Jay appears both laborious and heavy, kept up by frequent flappings of wing, undulating, too, and somewhat uncertain in direction, and seldom prolonged beyond the nearest tree, hedgerow, or copse. Under such circumstances the bird seems little capable of crossing any width of sea, or of taking a long migratory flight. The fact, however, remains beyond dispute that this seemingly weak and slow-flying bird is capable of long-sustained flights, which will compare even with those of the swift-winged Woodcock and Grey Plover.

Great numbers of Jays, along with other migrants, crossed Heligoland with an east to west flight in October, 1876. Mr. Gätke's notes sent me at that time are as follows:—"Oct. 21st, 1876. East, very strong. *G. glandarius*, thousands passing the island; some landed, caught; coming—never ending. Oct. 22nd and 23rd. East, strong. *Glandarius*, a great many still."

Since that date, and up to this year, Jays do not appear to have been observed at Heligoland, as Mr. Gätke's subsequent, and almost continuous, notes make no mention of them. Either the migration has passed some distance off the island, or been carried on at such a height as to be beyond the ken of human vision.

During the past autumn Jays have again passed Heligoland in enormous numbers. Mr. Gätke, under date of October 8th, writes:—"A perfect storm of Jays has passed over, and on both sides of the island, during the last three days. No one living has ever seen the like here; about fifty years ago enormous numbers were caught here, but during my time only twice or thrice have they come. On the 6th October, S.E., E. by S., very strong, clear, coldish, *G. glandarius*, continuous flights of hundreds. 7th, clear, blew about No. 8: *G. glandarius*, great flights continually passing. 8th, S.E., rather fresh, clear: *G. glandarius*, more than ever passing on above and beside the island."

It is noticeable that in both these years the migration of the Jay was in October, and continued over three days, and that it was carried on under the circumstances of a strong easterly gale.

The question then naturally arises, *whence* and *whither* was this great "storm" of Jays (as Mr. Gätke terms it) steering their course? Seen then seventy miles from land off the mouth of the Elbe, moving from east to west in a strong easterly gale, continuous flock after flock, never deviating from their course, which was straightforward seemingly across the wide tossing waters of the North Sea, with one purpose animating all alike, the forsaking of their native forests for a long flight to the west.

Mr. Gätke has always maintained that autumn migration, as observed at Heligoland, does not run north and south, but from east to west, birds invariably coming from the eastward and passing westward. The observations taken during late years on the migration of birds, as observed at lighthouses and light-vessels, quite confirm the views of the veteran observer. It is rarely that we find birds coming to our shores from any point north of east; migration is from east to west, or points south of east to north-easterly points. This great passage of Jays across Heligoland points also to the correctness of his theory, for it could hardly have its origin in the north, the whole of Scandinavia failing to supply the stream for more than a few hours.

It is reasonable, therefore, to suppose that they came from Eastern Europe across Germany, from the immense forest area between the Oder to beyond the Vistula, and probably much further east than this to the confines of Eastern Europe. That the area covered by this flight was very great we may well judge from the fact that the stream was *three* days in passing. Whether

the first impulse to move began at the extreme east or west of the range, extending backward or forward, we have unfortunately no means of knowing.

It will be interesting to learn if any great flight of Jays, corresponding in any degree with the thousands that crossed Heligoland, have been observed anywhere by our sharp-eyed reporters on the English coast, or any considerable increase in the ordinary number frequenting our woodlands. Previous to receiving Mr. Gätke's letter I had made a note of the number seen in shooting some small plantations in this neighbourhood, but certainly not exceeding double what we might expect to see under any circumstances.

Mr. Stevenson, in the 'Birds of Norfolk,' vol. i., p. 280, conjectures that the Norfolk Jays receive at times considerable accessions to their number in the autumn. So far as I am aware there is no direct evidence of the fact, except the statement, as given by Messrs. Sheppard and Whitear,* to the effect that "Some years since, as two gentlemen were sporting at Tunstal, in Suffolk, distant about five miles from the sea, they observed an extraordinary flight of Jays, passing in a single line from seaward to the interior. This line extended further than the eye could reach, and must have consisted of some thousands. Several of them were killed as they passed; but the firing at them did not occasion the rest to deviate from their line of flight."

It may be that the Jays seen crossing Heligoland passed southward along the European coast-line, as we know is the case with many birds which regularly cross that island in large numbers, and which rarely turn up on our own coast, except perhaps as solitary examples: be this as it may, however, this migration in such enormous numbers is a wonderful and striking phenomenon, and supplies cause for much conjecture—conjecture as to the "how and why" of this simultaneous movement; whether a mere normal phenomenon, which, under certain conditions of wind and weather, is at long intervals brought within the notice of the Heligolandiers, or a something out of the ordinary range of migration due to a scarcity of food, or some other cause which long patient waiting and extended observation alone can determine.

* 'A Catalogue of Norfolk and Suffolk Birds, with remarks,' 1826.

FIELD NOTES IN NORWAY IN 1881.

BY THE REV. H. H. SLATER, F.Z.S.

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Yorkshire Naturalists' Union.

THE following field notes were accumulated during a five weeks' visit to Norway in the spring of 1881. Of this time, May 9th to 10th were spent at Naersness, on the Christiania Fjord; May 11th to 22nd at Lillehammer, on the Miösen Lake; May 24th to 31st at Laurgaard, in the Gudbrandsdal; June 1st to 7th at Fokstuen, on the Dovre Fjeld; June 8th to 11th at Hjerkins, the next station to Fokstuen: we then returned to Christiania by the Foldal.

I was much struck by the scarcity of birds of prey. I do not think that I saw nearly so many as I should have done in an equal length of time in any tolerably uninhabited part of Scotland, or the north of England. The cause of this, to a great extent, is the reward which a short-sighted Government has placed on the heads of all the larger Raptores; owing to which they are ruthlessly hunted down by the peasants.

But there is a phenomenon in connection with this class of birds to which we have no parallel in England. At varying intervals of years the Lemming makes its appearance in countless numbers, overrunning the whole country; simultaneously the numbers of the birds of prey are largely increased, so that birds which are usually rare, such as the Snowy Owl and Jerfalcon, are then found on the fells not uncommonly. That these should make their appearance in greater numbers when suitable food is so plentiful, is intelligible and natural, but when we find that birds like the Capercaillie and Willow Grouse, and others, which have no interest in common, apparently, with the Lemming, are more plentiful in "Lemming years," it becomes rather difficult to see the connection between the two circumstances. Yet Herr Collett informs me that such is undoubtedly the case.

There seems to be some uncertainty how the new Game Laws will affect the naturalist collecting in Norway, but my experience leads me to believe that they will make but little, if any, difference to him. Undoubtedly no foreigner has now any right to carry a gun without a license on crown lands (such as the Dovre Fjeld); but I took out no licence. Norwegians do not take for granted,

when they see you with a gun, that you must necessarily be carrying it for illegal ends. Doubtless, if I had shot a bagful of ryper, I should soon have had a visit from the Lensmand, but as it was everyone seemed to take an interest in what I did, and to wish to assist me in any way possible.

The following were the birds I met with :—

MISSSEL THRUSH, *Turdus viscivorus* (L.)—Not uncommon near Lillehammer; but once seen near Laurgaard, and never on the Dovre Fjeld.

SONG THRUSH, *T. musicus* (L.)—Not uncommon in woods near Lillehammer, and up the Gudbrandsdal. In pine woods it appears generally to choose those spots where the trees are young and thick, and is not averse to marshy places.

REDWING, *T. iliacus* (L.)—Common in the Gudbrandsdal. On May 12th, near Lillehammer, it was still in flocks. At Laurgaard, May 24th and following days, it was pairing and preparing to nest in the birch growth. At Fokstuen it was fairly plentiful and nesting on June 2nd. At Hjerkin, on June 8th, the Redwings were singing beautifully in the birch woods, their song somewhat between those of the Missel and Common Thrushes; a nest I found that day was in the forks of a birch tree about eighteen inches from the ground, and the young birds in it were just getting their first feathers. It was curious to notice that there were two large birch tracts at Hjerkin, one to the east, towards Foldalen, the other to the west, under Gederyggen; the former seemed to be appropriated by the Redwings and the latter by the Fieldfares.

FIELDFARE, *T. pilaris* (L.)—Pretty common, breeding on the birch-clad slopes of Gederyggen, near Hjerkin, and less commonly around Fokstuen.

BLACKBIRD, *T. merula* (L.)—The rarest in Norway, as it seemed to me, of the *Turdidæ*. Pretty common near Naersness (Christiania Fjord); rare near Lillehammer, where I saw one and heard another; and not seen at Laurgaard nor on the Dovre Fjeld.

RING OUZEL, *T. torquatus* (L.)—Not uncommon near Laurgaard, and also on the Dovre Fjeld, in the birch region above the fir, where a search would probably have revealed the nest.

DIPPER, *Cinclus melanogaster* (Brehm).—I did not see this bird on Dovre, and only one at Laurgaard, which was feeding

strange to say) in one of the wooden pipes which conveys the water into a small corn-mill by the roadside which leads to Sels Vand. At Lillehammer it was pretty plentiful, on the Mesna, at least, where I once saw five the same day.

WHEATEAR, *Saxicola ænanthe* (L.)—Common at high and low altitudes alike, wherever there are rocks or stony places; nests in old walls or ruined cottages, under stones, or even in holes in the ground.

WHINCHAT, *Pratincola rubetra* (L.)—Dresser ('Birds of Europe,' vol. ii., p. 256) does not give one the idea that this bird is at all abundant in Norway, and up to my leaving Lillehammer I did not find it so; but as I went up the Gudbrandsdal I found it getting more and more plentiful, till, at Laurgaard, it was one of the commonest of all birds in the low grounds; it frequented the willows on the edges of the marshes, and any one could have shot thirty in a day. On the Dovre Fjeld it seemed rare, being apparently a lowland bird in Norway; but in the Foldal, below Dalen, it seemed fully as plentiful as at Laurgaard.

REDSTART, *Ruticilla phæniceus* (L.)—Very plentiful both at high and low altitudes. Nests in Norway, by preference in an old Woodpecker's or Tit's hole in a tree. It certainly has the power, in spite of its slender bill, of enlarging the hole to suit its requirements, as I found a nest at Fokstuen with one egg, of which the parents kept close to me; the fresh chips at the foot of the tree (it was a birch) were, many of them, lying in such positions on leaves, &c., as rain would have at once removed them from, which of course gave me approximately the date of their deposition. It is possible that the nest might have been commenced by a Woodpecker and deserted, but the shape of the hole was quite different to what a Woodpecker would have made, being almost circular, and only about seven or eight inches deep, while the nest which was placed in it was nearly six inches in external diameter.

RED-SPOTTED BLUETHROAT, *Cyanecula suecica* (L.)—Very plentiful on the Dovre Fjeld. At Fokstuen I might have shot twenty males any day, but the females were great skulkers, and seldom showed themselves. The note of this bird is remarkably varied, but may be at once recognised by the metallic "ting ting" with which it usually commences its warble, which is just like a couple of strokes on a small high-toned triangle. It also has a

peculiar hurried way of singing, as if it were anxious to get to the end of its song as soon as possible. At Hjerkinna it was very common also, both in the birch scrub and even in the dwarf willow and juniper scrub above the birch limit on the fells. I found a nest here with eight eggs, and sat down by it to blow some of them. The old birds at once came up and hovered angrily round me, often within a yard of me, though the eggs were not at all incubated, the female also quite forgetting her usual anxiety for concealment. Not only they, but every other Bluethroat within hearing of this excited couple, hurried up also, until I must have had about a dozen scolding within ten yards of me at once; the moment I rose, however, they all vanished, like Roderick Dhu's warriors, "where they stood." The nest was made of the finest grasses, and placed in an open space in the birch wood, under a branch of trailing juniper.

ROBIN, *Erithacus rubecula* (L.)—An Englishman, familiar with the way in which this bird courts the society of man in his native country, is surprised to find it shunning man altogether in Norway, and taking up its abode in the densest pine woods. It seems not uncommon, but very impatient of approach.

WHITETHROAT, *Sylvia rufa* (Bodd.)—I did not find this bird at all plentiful; in fact, I only saw two at Lillehammer.

LESSER WHITETHROAT, *S. curruca* (L.)—Though I did not find this plentiful, I saw it much oftener than the last. One was singing at Naersness, on the Christiania Fjord, on May 9th. I saw several near Lillehammer, one at Laurgaard, and two on the Dovre Fjeld. I shot one of the last (as it is a bird more generally seen at low altitudes) in order to be quite sure. It was singing cheerfully, and flitting uneasily, as its manner is, from birch to birch, near Hjerkinna, about 3800 feet above sea-level.

BLACKCAP, *S. atricapilla* (L.)—I only remarked one, which was in full song, at Naersness on May 9th.

GOLDEN CREST, *Regulus cristatus* (Koch).—Very abundant in conifer-growth at all altitudes.

CHIFFCHAFF, *Phylloscopus collybita* (Vieill.)—Most abundant everywhere in fir-growth; I only noticed one on the Dovre Fjeld.

WILLOW WREN, *P. trochilus* (L.)—Equally common with the last in the lowlands, but differing from it in being just as common at high altitudes, where it is found not only in the birch woods,

but even in dwarf willow and juniper scrub on the fjelds. I noticed several on the fjelds near Laurgaard, in a place where the ground was covered several feet deep with snow for miles; they, with Pied Flycatchers, were singing merrily in the birch trees.

ICTERINE WARBLER, *Hypolaïs icterina* (Vieill.)—One near Røken, close to Christiania, on May 9th; another at Lillehammer.

SEDGE WARBLER, *Acrocephalus schænobænus* (L.)—It is somewhat remarkable that this bird should be so plentiful in the extreme north of Norway, in Finmark and Nordland, and yet be so rare south of the Arctic Circle! I saw one or more near Laurgaard, in the willows amongst the marshes, a place one would consider well suited to their habits; one of them I heard singing during the night. I noticed none elsewhere.

HEDGESPARROW, *Accentor modularis* (L.)—This bird, like the Robin, does violence to an Englishman's previous notions when visiting Norway. In that country it avoids the neighbourhood of man, and is seen generally in the pine forests, but sometimes even in the heather and dwarf willow above the birch region, and is very shy.

LONG-TAILED TITMOUSE, *Acredula caudata* (L.)—Said to be common in Norway. I only happened to see about half a dozen. Its manners and voice are much like those of our dark-headed representative, but it is certainly, with its pure white head and yellow eyelids, a much prettier bird; and it seemed a little wilder also.

GREAT TITMOUSE, *Parus major* (L.); CONTINENTAL COAL TITMOUSE, *P. ater* (L.)—Common.

MARSH TITMOUSE, *P. palustris* (L.)—Said to be abundant up to Trondhjem. It was plentiful enough on the Christiania Fjord, but I only saw one at Lillehammer, and none north of that, its place being apparently taken by the following.

NORTHERN MARSH TITMOUSE, *P. borealis* (De Selys).—I did not notice this bird till I got to Lillehammer, where it was abundant, as also at Laurgaard; less so on Dovre. It cannot be mistaken for the last for a moment, even at some distance, being larger, much greyer, and the black cap prolonged further down the back. All the specimens I obtained, and all the dozens I saw in the woods, were much greyer than the bird figured in Dresser's 'Birds of Europe' (pl. 109), both on the back and on the flanks.

BLUE TITMOUSE, *P. caeruleus* (L.)—Pretty common, especially near Christiania.

CRESTED TITMOUSE, *Lophophanes cristatus* (L.)—Common in fir woods. In the large mixed flocks of Titmice one often meets with in the woods, this bird seems to take the lead, and to direct to some extent the movements of the others. Its note is stronger and more musical than those of other Tits, and when it happens to be alarmed and to fly off, calling out, the others, consisting of Marsh, Coal, and Blue Titmice, with sometimes Long-tailed Tits and Tree Creepers, generally follow at once. It seems to prefer young Scotch fir-growth to any other, where the trees are from twelve to eighteen feet high.

NORTHERN NUTHATCH, *Sitta europea* (L.)—I only remarked one example—at Naersness—of this bird, which is said to be found as far north as the hazel and oak.

CREEPER, *Certhia familiaris* (L.)—Common, often consorting with Titmice, as in England.

WREN, *Troglodytes parvulus* (Koch).—Pretty common south of Dovre in fir woods, and occasionally in birch-growth on Dovre. Much less tame and familiar than in England.

WHITE WAGTAIL, *Motacilla alba* (L.)—Very common and tame; flies and runs in the streets and on the quays of Christiania like the Sparrow in London. In the country you seldom see a farmhouse without one pair, at least, of these birds about it (during the summer only, of course), nor are they often seen at any distance from a house. I found two nests, each with six eggs; one in the wall of an outhouse at Hjerkinns; the other in the lake-embankment at Hamar, on Miösen. The nest is composed of fine grasses, with or without a little horsehair in the lining, and the eggs, which closely resemble those of the Pied Wagtail, have sometimes a ring of aggregated spots at the larger end.

GREY-HEADED WAGTAIL, *M. viridis* (Gm.)—First seen at Laurgaard, where it was not uncommon; but it was much more plentiful on Dovre, especially at Fokstuen, where a dozen might be seen together in the taller willow-growth near the station. It seems to breed later than *M. alba*, and I only found one nest, incomplete, in a wall near Hjerkinns.

MEADOW PIPIT, *Anthus pratensis* (L.)—Very common everywhere; perches in trees and bushes a great deal more than it does in England.

TREE PIPIT, *A. trivialis* (L.)—Very common in the lowlands, but apparently very rare on the Dovre Fjeld.

WAXWING, *Ampelis garrulus* (L.)—I hoped to meet with this bird alive, but all I saw of it consisted of the dried, weather-beaten remains of several which had been caught in horse-hair nooses on a mountain ash near Lillehammer during the preceding winter.

PIED FLYCATCHER, *Muscicapa atricapilla* (L.)—Plentiful. The first flight of this bird (consisting, apparently, of males alone, not quite in full breeding plumage) made its appearance at Naersness, on the Christiania Fjord, on May 10th. The day before I had seen none; this day they were abundant and rather listless. I had always considered the plumage of this bird and that of the Spotted Woodpeckers as very conspicuous—almost what might be called “loud.” But I had never seen either before in what was evidently their proper sphere, amongst the black and white stems of the birch trees, with which their colours harmonized so closely as to make them rather difficult to make out than otherwise, when they kept pretty still.

SWALLOW, *Hirundo rustica* (L.)—Plentiful in the Gudbrandsdal, getting less numerous towards Dovre, where they do not seem to occur. They made their appearance at Lillehammer for the first time on May 16th.

MARTIN, *Chelidon urbica* (L.)—Abundant everywhere; the only Swallow I noticed on the Dovre, where it breeds abundantly under the projecting eaves of the stations and their outhouses.

SAND MARTIN, *Cotyle riparia* (L.)—Common in the Gudbrandsdal, where it often selects the turf-roofs of the cottages to make its nest-burrows in.

SISKIN, *Chrysomitris spinus* (L.)—Common in conifer woods, but often seen feeding amongst alders and birches by stream-sides.

SPARROW, *Passer domesticus* (L.)—Common, but I did not notice it on the Dovre.

TREE SPARROW, *P. montana* (L.)—Not uncommon; is found near farm-houses, where the last-mentioned bird does not come, but they do not seem to associate together.

CHAFFINCH, *Fringilla cœlebs* (L.)—Very common; but I never saw it on the Dovre Fjeld.

BRAMBLING, *F. montifringilla* (L.)—Was in flocks at Lillehammer the earlier part of my stay there; when I got to Laur-

gaard it was paired and building in the birch-growth. At Fokstuen I found several nests, some with eggs. This bird displays great anxiety when you approach the nest; both male and female come and perch on the trees by the nest, sometimes within a yard of your head, uttering their plaintive cry. I paid them the compliment of attributing this conduct to parental affection until I found that their minds were quite as much troubled when the nest was so far advanced as to consist of about as much lichen and fibre as might be contained in an empty 12-bore cartridge case. The nest strikes one at once as being less tidy than that of a Chaffinch, and consists (on the Dovre Fjeld) in great part of reindeer-moss and similar lichens. The eggs principally differ from a Chaffinch's in their ground colour being bluer, though the latter occasionally lays eggs quite as blue as any Brambling's eggs I have seen. The call-note of the male has a peculiar, harsh, unmusical sound, and seems to consist of two different notes, a semitone apart, mingled and uttered together, rather reminding me of the noise of a double white-metal dog-whistle.

LINNET, *Linota cannabina* (L.)—Not uncommon in the valleys, but I did not notice it on Dovre.

MEALY REDPOLL, *L. linaria*.—I only identified this bird once to my satisfaction, when I saw a pair, apparently feeding, on the waste ground by the bridge at Laurgaard. I fancied I saw others at different times, but they were too shy for me to be quite certain.

TWITE, *L. flavirostris* (L.)—Appeared to be generally distributed, though in small numbers, on the Dovre Fjeld and the fells near Laurgaard.

NORTHERN BULLFINCH, *Pyrrhula major* (Brehm).—Not uncommon, but much oftener heard than seen. I tried to obtain specimens in the pine woods at Lillehammer by calling, but invariably without success; before I got sufficiently near the bird, a Hooded Crow always made its appearance (judging, I suppose, from its frequent calling that there were some eggs to be got) and drove my Bullfinch away. The would-be thieves occasionally got into trouble for their pains, for I never think a cartridge wasted if expended on a Hooded Crow.

CROSSBILL, *Loxia curvirostra* (L.)—I kept a sharp look out for this bird, but never saw it. Occasionally it is pretty common in the summer in S. Norway.

YELLOWHAMMER, *Emberiza citrinella* (L.)—Very abundant and tame. I shot a curious male Lillehammer, which had such a dark brown head, and showed so little chestnut on the rump, that I imagined, till I picked it up, that it was a male Ortolan not quite in full plumage.

ORTOLAN, *E. hortulana* (L.)—I saw one or two in the Gudbrandsdal, but it seemed pretty common near Christiania.

REED BUNTING, *E. schœniclus* (L.)—I saw one or two near Lillehammer, towards the Mesna Lakes, but found it abundant at Laurgaard in the marshes near the station. On Dovre it was one of the commonest birds, and was nesting when I was there.

LAPLAND BUNTING, *Plectrophanes lapponicus* (L.)—Very common at Fokstuen, but I saw none at Hjerkin; I have no doubt I could have killed eighty at the former place, where a dozen might be heard singing together. In fine weather they were very tame, running like mice amongst the willow-scrub in the marshes, and feeding composedly when I was only a few yards off. In wet weather they get very wild, and will not let you approach within forty yards. They were all paired whilst I was at Fokstuen, but (judging from the ovaries of two females I obtained) not laying; the male had still a few rusty feathers in the crown. The note—that of the male at least, for I never heard the female utter any but the low call-note common to both sexes—is one of the most pleasing I know. The ground-work is a sort of warbling twitter like the Sky Lark's song; but mingled with this, at regular intervals, come five fuller and more musical notes. When at some distance from the bird you lose the twitter, and these five notes are all you catch, being louder than the rest; they give you rather the idea of a peal of bells, and are always uttered in the same order. When singing the bird often sits on the top of a low bush; sometimes is high in air; in the latter case he descends, singing with elevated tail and outstretched quivering wings, like a Tree Pipit or Blue-throat. The food seemed to consist of sedge- and grass-seeds gathered from last year's still-standing plants, and mingled with small insects.

SNOW BUNTING, *P. nivalis* (L.)—I saw two small flocks at Lillehammer and one at Fokstuen, all very shy.

SKY LARK, *Alauda arvensis* (L.)—Very common near Lillehammer. I saw very few near Laurgaard, and none on the Dovre Fjeld.

STARLING, *Sturnus vulgaris* (L.)—Common in the lowlands.

JAY, *Garrulus glandarius* (L.)—Very common at Naersness and Laurgaard; less so near Lillehammer. On the Dovre I did not notice it.

MAGPIE, *Pica rustica* (Scop.)—Very common and tame. Nests in low trees close to the farm-houses, and passes a great part of its time on the roof of outhouses or near the doors. Near Fokstuen and Hjerkins stations there were old nests, but I saw no birds.

JACKDAW, *Corvus monedula* (L.)—Common in the Gudbrandsdal wherever there are cliffs.

HOODED CROW, *C. cornix* (L.)—Very common and tame all up the Gudbrandsdal, but apparently less numerous after you pass Laurgaard; not many noticed on Dovre. A bold and greedy robber in Norway, as he is everywhere else, and near Lillehammer is estimated to destroy half the eggs that all other birds lay. At Skjæggestad, in the Gudbrandsdal, I surprised a crow in one of the ditches by the river feeding on the brains of a warm and freshly-killed Water Vole. A Hooded Crow took me for a corpse at Spurn last autumn but one, as I was waiting at low water on the "clays," and came at me with a "caw" which might be translated "hooray!" He lived just long enough to repent of his mistake, but not long enough to escape the consequences of it.

ROOK, *C. frugilegus* (L.)—Not uncommon, but far less plentiful than in England. I do not know whether it forms rookeries in Norway, but I saw none.

RAVEN, *C. corax* (L.)—I saw one or two fly across the valley at Lillehammer, and one at Laurgaard. A pair were often visible near Hjerkins, towards Gederyggen, where they may have had a nest.

SWIFT, *Cypselus apus* (L.)—This bird had not arrived at Lillehammer up to my departure thence. I saw it two days afterwards, on May 23rd, at Byre, in the Gudbrandsdal. At Laurgaard there were many, but I saw none at Dovre.

GREAT BLACK WOODPECKER, *Dryocopus martius* (L.)—I only saw one, just beyond Sels Vand, near Laurgaard, which I watched for some time; it did not feed, and seemed uneasy at the presence of a Sparrowhawk, which absorbed all its attention, and prevented its noticing me. When it was aware of my presence within a few yards, it departed in a great hurry.

GREATER SPOTTED WOODPECKER, *Picus major* (L.)—Not uncommon, but oftener heard than seen. I only saw one near Lillehammer, though I heard many, and it was rare at Laurgaard. I saw none on Dovre.

LESSER SPOTTED WOODPECKER, *P. minor* (L.)—I shot a male near Lillehammer, and saw another. At Laurgaard I saw one, and at Fokstuen one.

THREE-TOED WOODPECKER, *Picoïdes tridactylus* (L.)—I only met with one example, a female, near Lillehammer, which was feeding on a nest of the large wood ant (*Formica rufa*).

GREEN WOODPECKER, *Gecinus viridis* (L.)—This, probably the commonest Woodpecker in Norway, I never happened to meet with.

WRYNECK, *Jynx torquilla* (L.)—I saw one on the hill above Lillehammer, and heard several others there and at Laurgaard; none noticed on Dovre.

CUCKOO, *Cuculus canorus* (L.)—Very common in Gudbrandsdalen, on Dovre, and in Foldalen. It may be persuaded to follow a person almost like a dog by imitating the note—a performance which never failed to astonish any Norwegian witness of it.

(To be continued.)

NATURAL HISTORY NOTES FROM ALDEBURGH.

By H. A. MACPHERSON.

During last autumn I spent a few weeks at Aldeburgh, and came across a few birds of some little interest.

Desiring to identify all the early arrivals and to get a few skins, I got a Thorpe fisherman to carry a gun occasionally. Upon August 16th a Redshank had still the nestling down adhering to the hind neck; the same morning a party of four Turnstones passed over head, stooping to A.'s call but not coming within gunshot. I got an example, a young bird, on the 19th, and saw a single Turnstone consorting with some common Sandpipers on the edge of the Alde river on August 27th.

Late in the afternoon of August 28th a fine Skua visited Thorpe mere, and I watched it for a considerable time; on August 31st a Great Skua, perhaps the same individual, was noticed at sea by the Thorpe fishermen.

On August 29th an old Curlew dropped within a very easy distance of our punt on the mud; five or six Knots came up from the north and flew round the mere at a considerable height; no mud being uncovered they went away south, possibly to the Alde river. Two days later some Knots pitched on the beach about 6 p.m.; one was in winter dress, but the other, a female, still bore considerable traces of the red breast.

On September 22nd, as I was crossing the bridge near A.'s cottage, I was attracted by the movements of a small grey stranger on the bank; I called A., and he crept within a few yards of the bird, but missed it, probably from excitement, for he saw that it was a Grey Phalarope beyond doubt, examining it very closely; I myself obtained a good view of it, for it was feeding busily; when missed, it flew away to the right and pitched on the mud at some distance; before we got up to it, away it went again, this time to sea; it was in full winter dress. A little later, a Lesser Tern came flying up the marsh towards us, near the railway line; being alone, he answered a call and A. got a shot, but, to my regret, breaking both wings. Its eyes were wonderfully bright; being an immature bird it is possible that it had been bred in the neighbourhood. The larger Terns apparently disappeared from Aldeburgh between the 2nd and 7th of September. We stopped a solitary Dunlin; in the afternoon A. brought me a fine Bar-tailed Godwit, a mature male, still wearing the red breast of summer; the latter was also killed on the edge of the marsh, near A.'s own house, which affords excellent opportunities for observing birds.

Turning out shortly before 6.30 a.m. on September 4th, I found that a large body of Sand Martins, together with a few House Swallows, were already streaming away south, apparently following the coast-line. When first observed, the air was literally full of them; by 7 a.m. the main flight had passed, though a few stragglers continued to pass southwards during the greater part of the day.

After reaching Thorpe Bridge, and passing a number of *C. riparia* resting upon the sails of the water-mill, I struck into the marsh, but saw and heard no waders except Ringed Plover, until I crossed the railway line, when a Green Sandpiper got up from the side of the river, this part being preserved, and went away showing the white tail conspicuously. I subsequently

found him feeding in a small creek not far from the sea, but though I wanted a specimen, the ubiquitous Ringed Plover, on one or two different occasions, gave the alarm prematurely. A few minutes later a fine Godwit, wearing the red breast, got up suddenly very close to me, showing the white rump beautifully; four or five Godwits then rose on the other side of the marsh and flew around, but did not pitch near me.

September 5th was very wet, and I could hardly persuade A. to turn out in the evening with his gun; two large parties of Dunlins and of Ringed Plover were feeding about 6 p.m. near his cottage, out of which he pointed out to me a couple of Pigmy Curlews; the one he secured was in full winter dress, whereas an example which Messrs. Burton, of Wardour Street, received at the same time, with several others,—shot, as the gentleman who shot them kindly told me, out of a party of nineteen, at Winchelsea, on September 4th,—had still much of the red breast, suggesting that it had not left its breeding quarters very long. On September 6th a Whimbrel turned up, and answered A.'s call, but did not come within shot; it was killed a few days later by a Thorpe man.

On September 7th we sailed down the Alde river hoping to see some Terns, as they breed in some numbers on a certain part of the beach; not a Tern however did we find, and it seemed probable that they had gone away south. Near Orford we were surprised to see a brace of Wigeon feeding on the left bank upon the mud; the wind being with us we got at them with difficulty, and A. missed a rather hard chance. Mr. E. G. Waddilove tells me that he killed two couple on Poole harbour on Sept. 22nd, this autumn, and fancied that even they were early birds. Near the mouth of the Alde, A. missed a common Scoter which came down to us, as we waited for it, with the tide. *Edemia nigra* was not much disconcerted, and when we began to "tack" home, after seeing nothing but a few Curlews, Redshanks, Common Sandpipers, and Ringed Dotterel, besides a single Godwit, the old fellow was on the feed and diving away in the same place. He had strayed from a party of sixteen or seventeen of these sea ducks, which were enjoying the shelter of the outer bank of the river, not at all far from land. After walking round the marsh from before daylight on September 8th, without securing a bird, we found that a pair of Golden Plover had pitched

on some dry mud near A.'s cottage; they seemed tired, and proved to be a male and female in a transitional dress, their black breasts being prettily marbled with white. During my forced absence, from September 9th to 13th, A. secured a couple of Sanderlings; they were feeding by themselves on the patch of mud patronised by the Phalarope of September 2nd, and proved to be a mature male and female in winter plumage.

On September 14th at flight time, a party of twelve or fourteen waders came up from the north and pitched on the mud on the Aldeburgh side of the mere; punting within a few yards of them, under cover of a bank, I recognised at least two or three examples of *T. subarquata*, by their white tail-coverts and curved bills: to make sure of their identity I went for a gun, but it was too dark when I returned to make more of them. I searched for them long and wearily on the 15th to no purpose, but next day we saw four examples, two of which A. shot for me, killing both at one shot. On September 18, a Thorpe fisherman showed me as a *rara avis* a fine Corn Crake, which he had picked up on the 17th on the beach, exhausted by a long flight. After resting for twenty-four hours it went away south happily enough. A few minutes later I came across a "red-tail" which I felt certain belonged to the black Redstart; it was shy, and after A. had missed one shot I decided to try to trap it, thinking that as I trapped two examples abroad in 1881, with ease, I could probably take this bird. Unfortunately, when I returned with a trap, I could find no traces of *titys*, though I waited until dark and searched the neighbourhood with all possible care. I do not think that there can be much doubt that it was a *titys*, immature or female; for the old male is so easily recognised by the white alar patch. When first seen it was searching for food in a manure heap, around which it spent the morning; there was no shelter except of nettles, nearer than a thin hedge, distant perhaps seventy yards; and its quarters were close to or on the beach, whereas I have never seen *phœnicurus* very near the sea; moreover, it flew about the hen-houses with the familiarity that this species haunts chalets and cowsheds in Switzerland; it actually entered one hen-house but darted out just as I tried to shut it in; its flight was that of *titys*, and as far as I could ascertain it was certainly that bird. I should have taken more pains to examine its dress had I not

felt sure of securing it. The same evening heavy rain and wind came on, and I have no doubt that *titys* left the exposed spot where I found him for sheltered quarters soon after I saw him last. As I was flying home for a trap, up got a fine Snow Bunting; as he went away with that uncertain butterfly-like flight which has been described so accurately in Mr. Seeböhm's 'Siberia,' I thought that we had seen the last of him. Turning out soon after daylight on the 19th, in the hopes of trapping *titys* (for which I searched all Thorpe unsuccessfully until I had to hurry back to catch the train to town), I was cheered by finding *P. nivalis* flitting along the beach between Aldeburgh and Thorpe; as no one else seemed to be about, and as it was still raining very heavily, the bird of icebergs was not wild, and with care I approached within a few yards and watched him as long as I could linger on *titys*' account; from his white wings and general appearance I felt that he was a male.

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from Zool. 1882, p. 456.)

To those who are inclined to go the expense of building huge dens, with elaborate appliances for heating them, to accommodate twenty-foot Boas and Pythons,—and there be they, of whose acquaintance I am proud, who would house the Great Sea Serpent himself, if they could get him,—to such I address myself but briefly, since they will probably take for their models the cages for reptiles of that description in one or other of our European zoological establishments. They can hardly do better than adopt the pattern of those in the new Reptilium at the Regent's Park, where a marked improvement upon the old edifice will be noted, although the latter had the reputation, until quite recently, of being the best of its kind in Europe; a great change has been effected, not only in the size and construction of the compartments themselves, admitting of better exhibition of their occupants, but in the water-supply, facilities for cleaning, and other arrangements connected with them, all of vast importance to the well-being of the snakes, and which, we may hope, will

demonstrate their value in diminished bills of mortality. Nevertheless, I take it for granted that very few amateurs, even the most enthusiastic, contemplate the erection of a reptile-house; and as isolated cages necessarily present some points of modification, a short chapter dealing with spacious lodgings and the serpents best suited to inhabit them may not be out of place.

First, as to the situation. Such a cage is most frequently built in an orchid or other exotic house or conservatory, and it seems reasonable to imagine that there would be the best place for it, no extra, specially applied, heating apparatus being required, and greater ventilation permitted while the high temperature is constant. But it has this disadvantage; the excessive warmth of the place renders any but the shortest stay in it disagreeable to dwellers in a temperate clime, to say nothing of the dangers attending the sudden transition to the outer air in cold weather. The consequence is that the snakes are rarely visited, and never become tame; or, if previously tame, soon become wild again. Setting aside the presumption that the creatures are kept for the purpose of study, too much stress cannot be laid upon the injunction that *for their own welfare* they should be placed where they can grow accustomed to the presence of human beings (and especially of particular people) as much as possible; where, in fact,—to use a common phrase which expresses the same idea from an opposite point of view,—they can “always be looked at,” and the more they are looked at, after the first novelty of their position as captives has worn off, the better. The tamest snake becomes nervous and spiteful in a very short time if put away out of sight, a circumstance frequently noticed by those who are obliged to cover up their pets in the winter through not being provided with adequate means of supplying artificial heat. It is a most important point this. A serpent's chance of doing well in confinement is, like that of most other animals, in direct proportion to the equanimity with which it accepts the situation, *ceteris paribus*. We all know the difficulties with a newly-caged wild bird or beast, the injury it may inflict upon itself in its terrified efforts to escape and no less terrified attempts at assault upon its captors, its refusal to feed, and not infrequent death, independent of these secondary causes, from sheer fright. All these things occur with snakes in

like manner, with the additional complication that, in endeavouring to strike, they bruise or cut their mouths, which, as we shall see later on, is an accident of peculiar gravity. A small "dark-green" (*Zamenis atrovirens*), which was introduced to the public gaze somewhat prematurely at the Zoological Gardens, actually beat itself to death against the glass; and hundreds of recently-caught specimens—probably, if the truth were known, a large majority of those that are taken alive—are speedily killed by being teased and induced to fly at the wire or glass covering of their box. They must be gradually habituated to the presence of spectators; a process by no means lengthy, though different species and different individuals vary very much in their capability of being tamed.

There is always a possibility of certain little accidents, too, which renders it desirable that they should be under the owner's eye—such as the occasional swallowing of one by another at feeding-time, getting their heads jammed into holes and corners, casual defects in the heating arrangements, and so forth. When the snakes are accustomed to man, these can be remedied with little danger or difficulty, and they will feed unreservedly and display their various characteristics under observation. The only greenhouse cage for big serpents that I have ever seen meeting these requirements was one built against the wall of the house, into which a sheet of plate glass of the same length was let; the cage itself thus formed an immense window for one of the rooms, while the snakes were really luxuriating in the tropical heat of the conservatory outside. Unfortunately, the plans were altered before it was completed, and the whole thing was turned into an aquarium instead.

Wherever it may be established, the chief consideration will, of course, be its size. This must altogether depend upon that of the reptiles for which it is designed. It cannot be too large for them; and I suppose it is hardly necessary to condemn the cruelty of imprisoning huge constrictors in those abominable *flat cases*, like those that are used for trinkets in a jeweller's shop, in which they are too often cramped up in travelling menageries and other exhibitions. Speaking generally, the height of the cage ought to be equal at least to two-thirds of the serpent's length, since it will rear itself up at times to that extent. It is not absolutely necessary to have it as long as the snake, though

it should not be less ; but the width ought always to exceed half the length of the body, so that the latter may be powerless to exert its expansive force against the front and back when doubled in a bight between them. Overcrowding is an evil to be avoided ; in a den of the dimensions here roughly indicated, four such snakes as the one supposed to be used for illustration of the proportionate length, breadth and height, will be quite enough.

Now, as to construction. Use as little woodwork as possible. It rots with the heat and damp ; harbours insects which annoy the snakes fearfully and even destroy their eyes, these being undefended by lids ; and is subject to perforation by rats and mice, which not only make an ingress for themselves and possibly kill the legitimate occupants, but by so doing provide a means of egress for the latter. Metal is too energetic a conductor of heat ; the best material for the floor and sides is Portland cement. The front must be of glass always—if it can be arranged so that one, two, or all three of the other sides shall be transparent also, so much the better ; but bars, netting or wirework of any kind should never be employed, whether the cage be itself situated in a warm atmosphere or whether it is furnished with applied heat. Nor should any apertures to which they can have access exist, except the most minute.

The most gentle snakes, no matter how long accustomed to confinement, will press and wriggle with all their might against the margins of an opening in their endeavours to get through until they cut their lips and rub their muzzles raw ; not necessarily from any desire to escape, since they will behave in precisely the same manner when allowed to roam through the open door, and are as likely to make their efforts from the outside as within. They are of an exploring and inquisitive nature, and if they discover a hole in their tree, will try to get their heads into it. I have often watched a snake making the most desperate and absurd attempts to pass through the ornamental spaces in a fender, over which it was repeatedly gliding backwards and forwards. For a similar reason, any beam or bar or ledge which traverses the cage should either stand well away from the sides, so that the snakes may pass freely round it, or should lie fairly and squarely against the solid work so that they cannot pass at all ; if any small and insufficient interval be left, they will injure themselves in persistent struggles

to force their heads between, and very likely do other damage if they succeed.

There is another contingency also, which makes it decidedly advisable to guard against leaving open spaces in any accessible position with certain serpents, and which has given rise to awkward *contretemps* more than once in our own and other zoological collections. I will relate a personal incident, by way of proving that the possibility to which I allude is no mere fanciful one. I was once bringing home from Brazil a large female Rattlesnake, which I had allowed to remain in the deal box covered with galvanised wire-netting in which I had bought her, for the simple reason that I had no better accommodation to spare on the voyage. Going to my cabin one afternoon, I met a little Rattlesnake climbing over the cant of the door; found two more at large inside; and was luckily just in time to prevent thirteen others from roving from the maternal home. Whether these sixteen constituted the entire brood, or whether some got adrift and were never discovered, I cannot say; but the uncertainty was not a pleasant one, either for me or my neighbours.

Glass, then, must be the medium through which the snakes, large or small, are to be viewed, and due regard must be paid to the strength of this. If a single sheet is used it should be of a greater thickness than what would be called for in a number of smaller panes. A big Python missing its aim when striking at its prey, or (as will occasionally happen) darting at some object outside its cage, sends its head against the glass with a *thud* which is not likely to be forgotten by any one who is present at the time; and even the passive weight of part of its body, overbalanced when reared aloft to its utmost extent, or rolling off a branch, may strike a blow which will test its resistance severely. And not only the pane itself, but the manner in which it is fixed demands particular attention. Some years ago an immense Anaconda, which had just been put into one of the largest compartments in the Reptilium at the Zoological Gardens, lying doubled between the glass and the tree in the centre, quietly expanded its coil—"stretching itself"—and pushed the front of the cage right out, the frame being forced away from its connections!

If the height be such that the snakes cannot reach it under any circumstances, or can at most only touch it without being

able to exert their force against it, the roof may with advantage be constructed of open wirework, strong netting of a small circular mesh being always preferable to bars. Perforated zinc, set in a metal binding and strengthened on the outside with transverse battens, must be used instead, if the den be not sufficiently high to keep it out of their way—it will be observed that I have not yet described anything for them to climb upon. This roof had better be arranged so that it can be removed at pleasure where practicable, care being taken to let it broadly overlap the space which it covers, and to fasten it securely with a bolt and staple, at intervals of not more than three feet. Where the cage extends to the ceiling of the building, the two ends should be provided with strips of perforated zinc, a foot broad, at their upper part, and a grated ventilator leading to the outside may be inserted in the middle or most inaccessible spot in the roof.

Whatever glass is employed must be a *fixture*, and a hinged (not sliding) door, high and wide enough for a man to enter, ought to be placed at each end; these doors should expose the floor of the cage, for convenience of cleaning, and should lie entirely upon the outside, not fitting into their aperture, as the door of a room does, but overlapping it like the lid of a box. Thus they can never become jammed. It will be found desirable to have also a small door or trap, a foot square or even less, for the purpose of introducing food; this may be cut in one of the proper doors or elsewhere, but is best situated on a level with the floor, so that rats or rabbits not eaten can be lured back into their box without the necessity of entering the cage to catch them. Methods of fastening and other details connected with these doors will be taken into consideration in a subsequent chapter, as will the general arrangements of the interior; two points, however, may be noticed here.

A stout limb of a tree, with the bark on it and plenty of branches lopped short,—the points of the forks trending upwards, of course,—should extend from the floor to the upper part of one side, or angle, in not too steep a slant, and be firmly fixed at both ends. This is an item of furniture which ought never to be omitted; snakes delight not only to climb, but to rest on the branches, and, by the exercise it affords them, a tree practically doubles the size of a cage.

Reptiles which never leave the ground in their wild state will glide about the bough like whip-snakes in a cage. If the dimensions of the den permit, two or three such gymnasia may be erected. Rockwork and artificial grottoes at the back are not to be commended, since the snakes are always hiding if the interstices are large enough, and trying to if they are not—witness the elaborately got-up serpent-cases in the lion-house at Antwerp, where, moreover, a most ridiculous effect is produced by looking-glasses.

(To be continued.)

NOTES AND QUERIES.

I had rather confess my ignorance than falsely profess knowledge. It is no shame not to know all things, but it is a just shame to overreach in anything.—BISHOP HALL.

The Natural History Museum, South Kensington.—Considerable progress has been made with the removal of the Natural History collections from the British Museum to South Kensington. The Geological collections have been to a great extent arranged, and the Mammalian and Reptilian Galleries are nearly completed, while the Fish Gallery is in course of arrangement, as well as the rooms devoted to the Invertebrata and the stratigraphical collections. The cases in the Zoological Galleries are now almost completed and fitted, and the Osteological and Conchological collections, as well as some of the stuffed animals, have been already removed to the new positions which they will henceforth occupy. It is expected that the transfer of the whole of the collections which are destined for removal from Bloomsbury to South Kensington will be completed by the end of the spring.

The British Association.—The Council of the British Association for the Advancement of Science have nominated Mr. A. G. Vernon Harcourt to the office of General Secretary, in the room of the late Prof. F. M. Balfour. The Council, acting under the powers conferred upon them by the General Committee, in accordance with their report, have appointed the following to be a committee, “to draw up suggestions upon methods of more systematic observations, and plans of operations for local Societies, together with a more uniform mode of publication of the results of their work,” and to “draw up a list of local Societies which publish their proceedings”:—Mr. H. G. Fordham (Secretary), Rev. Dr. Crosskey, Mr. C. E. De Rance, Sir Walter Elliot,

Mr. Francis Galton, Mr. John Hopkinson, Mr. R. Meldola, Mr. A. Ramsay, Prof. W. J. Sollas, Mr. G. J. Symons, Mr. W. Whitaker.

Proposed Museum for Shrewsbury.—In consequence of the removal of the Shrewsbury Royal Grammar School to new quarters on King's-land (a suburb of the town), it is proposed to utilise the old buildings for the purpose of a county museum, free library, and reading-rooms: and the Shropshire Archæological and Natural History Society are willing to transfer their valuable and interesting Roman, Archæological, Geological, Botanical, and Natural History collections to the building. £5000 are required to purchase the place and make the necessary alterations. Efforts are being made to raise this sum by subscription, £2000 having been already promised.

Russian Endowment of Scientific Research.—The Emperor of Russia has ordered £2200 to be allotted from the Imperial Treasury to the Russian traveller in New Guinea and the Malay Archipelago, M. Miklucho Maklay, in order to enable him to work up the results of his explorations. His Majesty has also ordered M. Maklay to be informed that the cost of the publication of his book of travels will be defrayed by the privy purse.

MAMMALIA.

Food of the Hedgehog.—The Hedgehog is generally described as a purely insectivorous animal, and many persons doubt whether the charge of sucking eggs, sometimes brought against him, is true. I had several sea-birds' eggs sent me last summer from the cliffs about Flamborough, and one or two of these were slightly cracked, a small piece of the shell of one being absent. I placed the box containing them, with the lid off, in the garden about dusk, and going out a short time after noticed a Hedgehog which I had standing on his hind feet with his nose in the box. On seeing me he instantly withdrew, and going up to the box I saw that the damaged egg had the hole considerably enlarged, and some of the yolk was about, evidently done by the Hedgehog's front paws whilst enlarging the hole; the contents, too, had been sucked up. The carnivorous propensity of this animal also has lately come under my notice, the victim being a young Landrail which I had in my possession. About dusk I was surprised to hear cries of distress, and on going to the place from whence the sound proceeded saw the Hedgehog before alluded to with the Landrail in his jaws, held crosswise. On taking the bird up, I found life to be all but extinct, the teeth-marks of the Hedgehog being plainly visible.—W. HEWETT (York).

The Polecat in Devon.—I very much fear that this animal has become extinct, if not in Devon, at any rate in the Exeter District. I have not seen one alive since 1852. The gamekeepers to whom I have

spoken about it all say they have not met with one for a long time, and I cannot see any recently-killed ones hung up in the places where such trophies are usually suspended. The Weasel also seems to be getting scarce. It would be well to put on record, before it is too late to do so with accuracy, the date at which the Polecat became extinct in Devon, if it be so, and I should be very glad to learn what others know about it. The Stoat appears to be still moderately plentiful.—W. S. M. D'URBAN (Exeter).

BIRDS.

Ornithological Notes from North Northamptonshire.—The Hobby, *Falco subbuteo*, was, as before mentioned (Zool. 1882, p. 392), much more frequent in our neighbourhood during the summer of 1882 than for many years previously; the last seen was distinctly recognised by me on the 17th September. The Peregrine Falcon, *Falco peregrinus*, was reported to me, on good authority, as having been observed in pursuit of a covey of Partridges on September 7th. I merely note this as a somewhat early appearance of this species in our locality. The first Wigeon, *Mareca penelope* (a female), was seen and shot September 23rd; a Teal, *Querquedula crecca*, was killed on the same day, but several of this latter species appeared about Lilford in the third week of August, and I have good grounds for believing that the Teal occasionally breeds in our neighbourhood. A Quail, *Coturnix communis*, was killed near Lowick, Thrapston, September 9th—the first occurrence of this species in our neighbourhood, which has come to my knowledge for several years past. I noticed a Grey Wagtail, *Motacilla sulphurea*, about the boathouse at Lilford, September 15th. I have seldom, if ever, seen this species hereabouts before November, but one of our people who was with me, and saw this bird just mentioned, assures me that the Grey Wagtail (which he perfectly distinguishes from the Yellow, *M. Rayi*), breeds every year at Titchmarsh Mill, on the Nen, about two miles from Lilford. The first Redwing of the season was seen by me October 5th, first heard of October 3rd (unusually late); first Jack Snipe, *Gallinago gallinula*, Oct. 10th; Grey Crow, *Corvus cornix*, Sept. 30th (exceptionally early); Laughing Gulls, *Larus ridibundus*, Oct. 13th; Golden Plovers, *Charadrius pluvialis*, Oct. 3rd; Ring Ouzel, *Turdus torquatus*, Oct. 13th. A trained Falcon, soaring high in air over our valley, was stooped at repeatedly by a small bird of prey, which I have no doubt was a Merlin, *Falco aesalon*. On the day following this occurrence (Oct. 8th) my falconer assured me that he saw no less than six Merlins pass over the house at Lilford in a southerly direction in less than an hour's time. My friend and neighbour, Mr. G. Hunt, reported having witnessed an extraordinary migration of Starlings, *Sturnus vulgaris*, on October 20th; he describes them as passing him in thousands for more than two hours, flying low in a southerly direction, against the wind, up the valley of the Nen. A very

unusual number of Jays, *Garrulus glandarius*, appeared in our woods early in October. A Water Rail, *Rallus aquaticus*, was seen at the Aviary Pond, Lilford, Oct. 21st. Hawfinches, *Coccothraustes vulgaris*, appeared in large numbers about the lawn at Lilford, October 24th, on which day we were visited by furious sudden squalls of wind from N.W., with heavy snow at times, and some thunder and lightning. Bramblings, *Fringilla montifringilla*, were in force about the lawn at Lilford, Oct. 25th. I have no exact record of the date of the first appearance of Woodcock, *Scolopax rusticola*, in our neighbourhood this autumn, but it was during the week beginning October 22nd. The Fieldfare, *Turdus pilaris*, was first seen on October 30th.—LILFORD.

Ornithological Notes from the Isle of Wight.—In a former note the late appearance of Swallows was remarked on, none having been seen till the 14th April. But the Martin was still more behind time, none, so far as I am aware, having been observed till May. Few of either species remained here throughout the summer, and none to breed. It is noteworthy that of late years neither species has abounded, except at the autumnal migration; the reason I am at a loss to conjecture. The scarcity of our common birds is readily accounted for, seeing that thousands perished the winter before last, frozen or starved to death even in this sheltered locality; but how to account for the paucity of the summer migrants I know not, unless many perished during that severe weather in the South of Europe. A small party of Ring Ouzels was seen among the gorse at the foot of the Downs towards the latter end of October; none breed here, but are generally to be met with at the autumnal migration. A Rook of a greyish white colour was lately seen in Appuldurcombe Park. Both Swallows and Martins were observed in considerable numbers on the 31st October, in a sheltered part of the town; they are generally to be met with till the middle of November, or later. I am informed by a neighbour who has a fair knowledge of birds that he observed, on the 14th October, a very large dark-plumaged bird—an Eagle, he says—pass over the town in a westerly direction. From the description given I believe it was an Osprey. Mr. Henry Rogers, of Freshwater, has sent me a list of the birds seen or heard of during the past summer and autumn, also of those that have bred in the cliffs. On May 11th a pair of Hoopoes were brought to him. On the following day two Pied Flycatchers were seen, a species that has been several times observed at Freshwater, and I have known of two being shot—one at Sea View and another near Ryde. On September 19th a Little Owl, a male, in fine plumage, was procured. I am not aware that *Strix passerina* was ever met with before in the island. A Whimbrel was shot the same day. On the 2nd October Ring Ouzels were observed on the Downs, also large flocks of Golden Plover. On the 12th several Fieldfares and Redwings were seen—the earliest date Mr. Rogers remembers. On

the 20th several Black Redstarts, both male and female, were met with, and one was shot near Freshwater Bay. A Grey Phalarope was procured on the 3rd November. Though the Chough has been twice seen during the summer, it does not breed in the island, but there is reason to believe that it would do so, as of yore, if protected. It is much to be regretted that a strict watch is not kept at Freshwater during the nesting season: only a year or two ago I saw a pair of Peregrines, in perfect plumage, that had been trapped and the eggs taken. I am informed by Mr. Dimmick, of Ryde, that on the 7th November he had an adult Richardson's Skua brought to him.—HENRY HADFIELD (High Cliff, Ventnor).

Ornithological Notes from Devon.—A remarkably coloured young Rook was shot near Crediton on July 13th, and brought to me. The quill-feathers were pure white, and the legs and feet were mottled with white. A Hoopoe was shot on Dawlish Warren on August 19th. I know of only four previous occurrences of this bird in the Exeter district since 1820. In this county Hoopoes nearly always occur on or near the coast. The last date at which a Swift was seen by me near Exeter was August 17th, but there were very few about after the 10th. On August 20th, the weather being cold and stormy, a flight of Missel Thrushes passed over Exeter from the north-east at 4.20 p.m. A Red-legged Partridge was shot near Okehampton on October 3rd: this is not a common bird in Devon. A Woodcock was seen on October 10th, at Whitstone, near Exeter. It may have been bred in the neighbourhood, as a nest was found in that parish in 1853, the young being hatched on April 23rd. Another Woodcock occurred near Moretonhampstead on the 15th and two others at the Grange, near Honiton, on the 21st October. A female Black Redstart was captured alive near Exeter, and was shown to me in a cage on October 7th. This is an early date for this species to arrive; they are seldom met with before November, though they have occurred as early as September. Swallows and House Martins were very numerous up to October 14th, about Lidford, but since that date I have not seen any. At the beginning of September there were several Landrails in a poulterer's shop in Exeter; and on October 13th one was put up on the moor near Lidford, and I also saw one which had been shot the previous day on Blackdown, near Lidford railway-station. On October 13th I also saw two Jack Snipe on Dartmoor. Bullfinches were very numerous in the oak-copses in Lydford Gorge in October; and I noticed a Cirl Bunting amongst a lot of small birds in that neighbourhood. On November 14th Rooks were very busy carrying off acorns from some evergreen oaks in front of my window. They pitch on the topmost sprays and pick off the acorns with much difficulty.—W. S. M. D'URBAN (Albuera, St. Leonard's, Exeter).

The Note of the Manx Shearwater.—As a member of the Committee appointed by the British Association to collect observations on the migration

of birds at lighthouses, I have recently had much correspondence with the light-keepers. On April 25th Edward M'Carron, keeper at the Tearaght Rock Lighthouse, off the coast of Kerry, wrote to me thus:—"There is some solitary bird—so it seems, as there appears to be only one—makes a noise so loud, or crows so loud, in the cliffs that we can hear it distinctly in the dwellings. It sounds as follows, 'kuck, kuck, ko—kuck, kuck, ko.' This is repeated a few times, and then there is an interval of some minutes. For so far I can neither see it nor hear it in the daytime. I believe it is called in this place the 'Night-bird.'" Towards the end of May I happened to be on the island of Lambay, off the Dublin coast, for a few days, with my friend Mr. H. C. Hart, and the coast-guard officer stationed there described a remarkable note uttered by some bird at night-time round the island. Curious to hear it, I started alone about midnight for a walk along the cliffs. The night was calm and dark, and for a considerable time I stumbled along among the briars and rabbit-holes close to the edge of the cliffs without hearing anything. Having reached a dark little inlet, I suddenly heard an unusual and loud noise. It seemed about a hundred yards out to sea, and evidently came from something in motion. I thought I saw a bird: the noise was loud, and is not easy to describe, the note being repeated three times. Indeed had I not been prepared for some sound the noise would have startled me. Within the space of half an hour I heard it four or five times. Sometimes it approached near to the cliffs, and even seemed a little way inland. In calm weather it would be heard a long distance over the water. Thompson, in his 'Natural History of Ireland' (vol. iii. p. 412), speaking of the Manx Shearwater, says:—"Mr. R. Chute informed me, in 1846, that the Shearwater breeds on the larger Skellig Island, off the coast of Kerry, whence a specimen was sent to him in July, 1850. They are called 'Night-birds,' from the circumstance of their being only seen at night about the rock." In July, 1880, I visited the Skelligs for botanical purposes, and also the Tearaght Rock, twenty two miles north of the Skelligs. I saw the Gannets breeding on the Little Skellig, and the Manx Shearwater was seen in the neighbourhood of both islands. In May last I saw this Shearwater near Lambay, where it is known to breed (Watters, 'Birds of Ireland,' p. 267). It is highly probable, from the foregoing evidence, that the noise heard by the light-keeper at the Tearaght Rock and the noise I heard at Lambay was produced by the Manx Shearwater.—

RICHARD M. BARRINGTON (Fassaroe, Bray).

[It does not appear to us that there is any evidence at all to connect the sound heard with the Manx Shearwater, the author of the cry not having been seen. All that can be said is that the note in question, being unlike that of any of the Gulls or other well-known rock-haunting sea-fowl, and the Manx Shearwater being nocturnal in its habits, it is *probably* the author of the peculiar cry described.—ED.]

Late stay of the Swift in Autumn.—I saw a Swift here, at Llandaff, on October 17th. Once it passed about twelve or fifteen feet above my head, so there was no possibility of my mistaking the species. On the following morning I again saw the bird,—no doubt the same one,—but flying higher in the air than on the previous afternoon, probably finding food abundant, as the day was bright and genial. To my surprise I saw it for the third time on October 20th in the same locality, at a fair height in the air, and concluded that it roosted in the cathedral spire, as I watched it till nearly dusk, and it did not fly any great distance from the building. Since writing the above I have seen this solitary bird twice more—on October 28th (a wet, cold day) and on November 3rd, when it was flying about the same place where I had previously seen it, skimming through the air as on a summer's day. On this last occasion I was able to direct the attention of others to it, who were equally surprised with myself to see this bird so late in the autumn. I believe it is unusual for the Swift to stay with us after the 11th or 12th August; this year, however, I counted fourteen on the evening of August 24th, flying over the River Taff; and I find there are several instances of its being seen both in September and October. I have seen it myself in September in the North of Scotland, where on the evening of the 8th, about dusk, I counted upwards of fifty, flying along the line of the sea-shore from east to west, evidently migrating; I can, however, find no instance of its having been observed to take up its abode for any length of time in the same place at this period of the year, and considering the weather that prevailed at that time, it is a marvel to me how the bird could have existed.—C. YOUNG (Llandaff).

Lesser Redpoll breeding near Oxford.—Although, according to Mr. A. G. More, Oxfordshire is one of the counties in which this species occasionally breeds, the only nest that I have heard of was found near Marston, in May, 1882. It was placed in a hedge and only contained two eggs, one of which my informant took out to examine. Thereupon the old birds flew up, the male (in crimson dress) perching quite close to the nest. Unluckily, they forsook the nest. It is possible that other pairs bred here last summer, because Mr. S. Salter, who has until this year always resided near Oxford, and is a very keen observer, recently wrote to me that on visiting Oxford on and after July 20th he was much struck by the numbers of Lesser Redpolls in the parks.—H. A. MACPHERSON (Oxford).

Nightingale in Ireland.—There is a specimen of the Nightingale preserved in the Museum of Queen's College, Cork, of which no notice appears to have been published. Mr. F. R. Rohu, taxidermist, Cork, in answer to my inquiry, replies, "I shot it myself at the Old Head of Kinsale about the 10th September, 1876." When recently at Mr. Fennessy's nursery in Waterford, he informed me that his foreman, Mr. Thomas Vobe, had seen

a Nightingale there. I asked to see Mr. Vobe, an intelligent Englishman, who informed me that he was very well acquainted with the appearance and notes of the Nightingale in the southern counties of England; that towards the end of last May he saw and heard a Nightingale most distinctly in the Waterford Nursery, and that he watched it for nearly an hour between 8 and 9 p.m., being much interested about it.—R. J. USSHER (Cappagh, Waterford).

Red-backed Shrike and Manx Shearwater in Nottinghamshire.—I shot a female Red-backed Shrike near the house here: it is the first specimen I have seen in North Notts. A Manx Shearwater was picked up in an exhausted state in the school-yard at Sutton-in-Ashfield, which is about sixty miles from the sea, on September 1st. It only lived a short time after being found. It is a great addition to my collection as a Nottinghamshire bird.—J. WHITAKER (Rainworth, Notts).

Goshawk near Oxford.—On October 19th I heard from a bird-loving cobbler in St. Clement's that a Goshawk, *Astur palumbarius*, had been taken near Shotover on the 12th. My informant had purchased it from the birdcatcher, who took it in his clap-nets as it pounced on one of his decoy-birds. I found it still in the flesh. Mr. O. V. Aplin and his brother agree with me that it is probably a young male. We only know of one other occurrence of the species in Oxon.—H. A. MACPHERSON (Oxford).

Great Snipe in Lincolnshire.—A male specimen of this bird was shot at Stickney on the 4th October last, and sent to me for preservation. It was exceedingly fat, and weighed very nearly ten ounces.—J. CULLINGFORD (University Museum, Durham).

Coot and Moorhen laying in the same Nest.—Whilst collecting on Strensall Common in May last I found, in a nest of the Waterhen containing eight eggs, two eggs of the Coot. These were placed in the middle of the nest surrounded by the eggs of the Waterhen.—W. HEWETT (York).

On the Missel Thrush and Chaffinch nesting in proximity.—A few days since, whilst reading Mr. Dresser's 'Birds of Europe,' I came upon the lengthy quotation which he makes from the writings of a French author describing the interesting fact that in the immediate neighbourhood of Paris the Missel Thrush and the Chaffinch almost invariably nest in company. This French gentleman had found a considerable number of nests of the Missel Thrush, and on every single occasion there was a Chaffinch's nest within a few yards—generally on the same tree. It seems that the Chaffinch acts as watchman, giving immediate notice to the Missel Thrush of the approach of a Magpie or any bird of egg-thieving habits, whereupon the Missel Thrush immediately sallies out and does battle with

the invader, thus preserving her own eggs and those of her guardian. This peculiar habit seems not to have been observed in other parts of France, and Mr. Dresser's object in mentioning it is, as he says, to draw attention to it and discover whether it has ever before been noticed in England. I was immediately reminded of a paragraph which I saw in the 'Daily News' of August, 1876, as follows:—"Mr. F. Baker, of Kingscote, Wokingham, writes to us—"In May last a Missel Thrush built in a fir on my lawn. About ten days after a Chaffinch built on a branch of the same tree, and was sitting when the Missel Thrush hatched. I could not, after long watching, see the male Thrush, by which I was led to believe he was somehow destroyed. When the young were a few days old I frequently heard them clamouring, as if being fed, when in a few moments the cock Chaffinch only would fly from that part of the tree occupied by the Thrush's nest. Not understanding this, I posted myself in a position some distance from the tree, whence, with the aid of a telescope, I could command a full view of the nest, and was much astonished on seeing the Chaffinch repeatedly come and feed the young Thrushes—in fact, much oftener than the Thrush, which he would attack and drive away every time he found her near the nest. He fed them till they flew, when his own young were hatched, which he assisted his mate in rearing with equal assiduity.'" From this it appears that the above-mentioned habit, or something very like it, has on one occasion, at least, been observed in England.—ROBERT MILLER CHRISTY (Saffron Walden).

Hobby breeding in Oxfordshire.—In June, 1882, a pair of nesting Hobbies were shot, and their nest with two eggs taken, in a wood near Cumnor.—H. A. MACPHERSON (Oxford).

Montagu's Harrier in Ireland.—At Brittas, in the Queen's County, the seat of the late General Dunne, is preserved a specimen of *Circus cineraceus*, which I have examined, and which bears the following inscription:—"Montagu's Harrier, shot by John McEvoy, gamekeeper, on Ballinahemey Mountain, 25th September, 1855." This mountain is part of the adjacent Slieve Bloom range. Mr. Robert Dunne, writing recently from Brittas, has informed me that this specimen is in good preservation. This is the fourth instance, I believe, in which Montagu's Harrier has been obtained in Ireland. Two are recorded in Thompson—No. 1, at Bray (vol. i., p. 247); No. 2, at the Scalp (vol. ii., p. viii). A third, again at the Scalp, in 1877, on the authority of Mr. E. Williams, recorded by Mr. A. G. More, in the 'British Association Guide to Dublin' (1878), p. 78.—R. J. USSHER (Cappagh, Co. Waterford).

Great Crested Grebe breeding in Oxfordshire.—Two pairs of the Great Crested Grebe, *Podiceps cristatus*, reared their young last summer on Clattercut Reservoir, an extensive piece of water in the north of this county.

Mr. H. Holbeck, of Farnborough Hall, and I, early in August, saw both pairs and four young ones; two of these were nearly full grown, the others were smaller, and still followed the old bird. Mr. Holbeck tells me he saw three young ones there in July, 1880.—OLIVER V. APLIN (Banbury, Oxon).

Albino Common Bunting.—On the 4th September last I got a pure white Common Bunting from the south of Lincolnshire. It was so shattered by the shot that it was impossible to tell the sex.—J. CULLINGFORD (University Museum, Durham).

The Black-winged Peafowl.—Mr. Cecil Smith's valuable note on Black-winged Pea-fowl (Zool. 1882, p. 462) leads me to think that the readers of 'The Zoologist' may be interested in referring to some careful remarks on this subject contained in a work entitled 'Notes by Sir Robert Heron,' third edition (1852), p. 25. Many years ago I myself bred a perfect black-winged Peacock from parents of the ordinary race, which, so far as I know, had no black-winged ancestry. The excess of dark colouring in the males of this race, and the invariable deficiency of dark colouring in the females, is, I think, a noteworthy circumstance.—J. H. GURNEY (Northrepps Hall).

Rustic Bunting near London.—Mr. Burton, of Wardour Street, was good enough to send me a small Bunting, in the flesh, on November 20th ult., which proved to be a young male of the Rustic, or Lesbian, Bunting, *Emberiza rustica*, Pallas, of which species, I believe, there has been but one recorded occurrence in this country. Mr. Burton informs me that the present specimen was taken in the nets of a birdcatcher at Elstree Reservoir on November 19th.—LILFORD.

[The first, and hitherto the only, recorded British example of this Bunting was taken near Brighton, in October, 1867. It was reported by the late Mr. Gould in 'The Ibis' for 1869, p. 128, and is figured in his finely illustrated 'Birds of Great Britain.' The nidification of this bird has been recently elucidated by Mr. Seebohm, who found it breeding in Asiatic Siberia. See his recently published book, 'Siberia in Asia,' of which a review is given in this number.—ED.]

Short-toed Lark near Cambridge.—I understand that a specimen of the Short-toed Lark, *Calandrella brachydactyla* (Leisler), was taken by a birdcatcher near Cambridge in the middle of November last, and submitted for the inspection and opinion of Prof. Newton, who confirmed the surmise as to its species and rarity in the British Islands. Only about half-a-dozen examples of this bird have been recorded to have been met with in England, and, with one exception, these were all obtained in the southern counties of Sussex, Hants, and Cornwall.—J. E. HARTING.

The Blue-tailed Bee-eater.—Mr. Hancock, in his 'Catalogue of the Birds of Northumberland and Durham,' p. 28 (Newcastle, 1874), says a

specimen of the Blue-tailed Bee-eater (*Merops philippinus*, Linn.) was shot near the Snook, Seaton Carew, in August, 1862." Endeavours have been recently made to obtain this example for identification, but without success; when its whereabouts are known it will probably prove to be a specimen of the Blue-cheeked Bee-eater (*Merops persicus*, Pallas), as Mr. Dresser remarked in his article in the 'Birds of Europe,' v. p. 168 (1877). It is much more probable for the ordinary African species to occur in Great Britain than for an inhabitant of the Philippines to wander so far west. The young of the two species bear a close resemblance to one another.—H. T. WHARTON (39, St. George's Road, Kilburn, N.W.)

The Tawny Pipit in Sussex.—On the 23rd October last a Tawny Pipit, *Anthus campestris*, was caught by a birdcatcher in the neighbourhood of Brighton. Five instances of the occurrence of this bird in England are recorded in Mr. Harting's 'Handbook of British Birds' (p. 108). Since the publication of this work, in 1872, two more have been reported, which, together with the subject under notice, bring the number up to eight. It seems somewhat strange that, with a single exception (the one from Scilly, noticed by Mr. Rodd, Zool. 1868, p. 1458), all these specimens have been obtained in the neighbourhood of Brighton.—THOMAS PARKIN (Halton, near Hastings).

Building Sites of the House Martin.—In reading your review of Mr. Lucas's book on the 'Natural History of Nidderdale' (Zool. 1882, p. 437), I was struck with the mention of a breeding locality of *Hirundo urbica*, under the ledges of the limestone cliffs in Wharfedale, as also of a remark implying that it was only among limestone cliffs that the nests were to be met with in this, their natural position. I am acquainted with three localities where the nests are to be met with *in cliffs*: namely, among the rocks of Cromarty (in a gully near the sea-shore), which are red-sandstone, as is well known; secondly, in some sandstone rocks by the side of a small stream that runs through the woods of Darnaway, N.B.; and, thirdly, on the sea-cliffs near Berry Head, Devon, where the formation is limestone.—C. YOUNG (Llandaff).

Gyr Falcon in Sussex.—A fine specimen of this noble Falcon was shot by Mr. G. Foord, of Balsdean, on September 26th. It was brought to Lewes Market on the above-mentioned day, sold to Mr. R. J. Woodman, and re-sold by him to me. It had been seen some weeks previously on the Downs, near Balsdean. The exact locality where the bird was killed was on the top of Bullock Hill, near Balsdean, which hill is well known to the followers of the Brookside Harriers. It was sent to Mr. Swaysland, taxidermist, of Queen's Road, Brighton, to be preserved, and from him I have learned the following particulars:—The Falcon proved to be a female, in good plumage, and, from the colouring, an adult bird of some age,

and in excellent condition. Length from point of beak to end of tail, $24\frac{3}{4}$ in.; breadth of wings, when extended, from tip to tip, 52 in.; weight, 3 lbs. 11 oz. By a curious coincidence it is not at all unlikely that this Falcon was seen by Mr. Henry Swaysland, jun., in June last, who, writing to his father at Brighton, described the bird's plumage in accurate terms, having approached it within a distance of thirty yards, when sitting on the cliffs near Rousdon, Lyme Regis, the seat of Sir Henry Peek, M.P., for which gentleman Mr. Swaysland, jun., has been arranging a collection of birds, and on whose domain the wild and lofty cliffs fronting the sea form a splendid haunt for many of our noblest birds, and where, I have been informed, the Peregrine and the Raven have been seen nesting within a short distance of each other.—T. J. MONK (Lewes).

[Our contributor does not state to what species of Gyr Falcon the bird in question belongs; but another correspondent, Mr. Thomas Parkin, of Halton, near Hastings, who has seen it, assures us that it is a Greenland Falcon.—ED.]

Food of the Bittern.—I do not think that any record has been published of a fine Bittern shot near Brookhampton, Oxon, late in November, 1879. I saw it in Oxford Market, and Mr. Darbey, the birdstuffer, opened it, when we took out six or seven small dace.—H. A. MACPHERSON (Oxford).

Honey Buzzard in Lincolnshire.—On the 24th October I received a fine specimen of this bird, which had been shot near Boston a day or two previously. The crop was quite empty. It is a light variety, and an adult female.—J. CULLINGFORD (University Museum, Durham).

Purchase of the Audubon Collection of Birds.—Prof. Henry A. Ward, of Rochester, New York, has purchased from Mr. M. R. Audubon, a grandson of the famous ornithologist, the collection of 748 skins of birds gathered by John J. Audubon, when preparing his great work, the 'Birds of America.' The collection is said to be in a fine state of preservation, and many of the labels are in Audubon's handwriting.

Yarrell's 'British Birds.'—The 16th part of the fourth edition of "Yarrell," revised by Mr. Howard Saunders, will be published next month, and it is expected that the succeeding parts will thenceforward be issued at regular intervals.

'The Ibis' List of British Birds.—We understand that 'The Ibis List of British Birds,' compiled by a Committee appointed by the British Ornithologists' Union, is for the most part in the press, and will be published before the next annual meeting of the B. O. U.

FISHES.

Swordfish on the Coast of Norfolk.—A fine example of *Xiphias gladius*, Linn., was captured in Burnham Harbour, on November 13th,

1882. The fishermen observed it struggling in what is called "the lake," where the water remains inside the bar at low tides. The fish was nearly exhausted, and its captor informed me only flapped its gills a few times before being landed. It measured ten feet from the tip of the sword to a point equidistant between the lobes of the tail-fin.—H. W. FEILDEN (West House, Wells, Norfolk).

Fox Shark, or "Thresher," off the Coast of Devon.—This Shark so frequently occurs on the Devonshire coast in autumn—following the Pilchards as they ascend the channel—that it is hardly worth while recording each capture. One which I saw, on the 24th September last, at Exmouth, was taken the day before off Teignmouth. It was ten feet long, and therefore rather a small specimen, the usual size being thirteen or fourteen feet, including the tail. In October, 1874, I received one only four feet in total length, which had been taken at Brixham. The skin of this fish is so very tender that few persons can succeed in removing it entire for preservation.—W. S. M. D'URBAN (Albuera, Exeter).

Large Carp in Sussex.—One day in November last the Earl of Sheffield, fishing in his private water at Sheffield Park, Sussex, caught a Carp which weighed 19 lbs.

Brill with both sides coloured.—On the 6th September last, when Mr. A. K. Hamilton was trawling in his steam yacht 'Starlight' off the Pole Sand at Exmouth, he took a Brill having the deficiency in the continuance of the dorsal outline just behind the head which is mentioned by Couch, in his 'Fishes of the British Islands' (vol. iii., p. 197), as being occasionally observed in the Flounder. As in that fish, this notch behind the head is accompanied by coloration of the under, or usually white, side, with the exception of a white blotch on the gill-covers.—W. S. M. D'URBAN (Albuera, Exeter).

CRUSTACEA.

Scyllarus arctus at Plymouth.—On the 13th November, last two specimens of that rare Crustacean, *Scyllarus arctus*, were brought up in a trawl off Plymouth, and are now in the possession of Mr. W. Hearder.—JOHN GATCOMBE (55, Durnford Street, Stonehouse, Plymouth).

[We may remind our readers that this lobster-like Crustacean is figured in 'The Zoologist' for December, 1879, p. 473, in illustration of remarks on the species by Mr. Cornish.—ED.]

ARCHÆOLOGY.

Ancient Camps in Epping Forest.—The British Association has appointed a committee for the exploration of the ancient camps in Epping Forest. It has been found that on both sides of the Thames "dene holes"

exist which date from a time when the art of building can scarcely be said to have existed in this island, and when invisibility formed the best security against the sudden attacks of an enemy. In Essex "dene holes" are abundant in the district between East Tilbury and Purfleet. In Kent they are especially abundant near the old settlements, or sites for settlements, on the river, at Greenwich, Woolwich, Erith, and Greenhithe. Their position—one, two, or three miles from the river, and their concentration in spots about the same distance from the natural sites for settlements on the Thames, seem to suggest that they were used both as storehouses and as places of occasional refuge from pirates who might attack the villages on the river-bank. It is proposed to explore the Essex "dene holes" when the work at the Loughton camp is completed.

Remains of the Irish Elk near Belfast.—During the last week of November, as some workmen in the employ of Mr. Hugh Montgomery, of Rosemount, were engaged in making a drain in Grangee Bog, about a mile from Grey Abbey, they dug up the principal portion of the head and horns of what is believed to have been an Irish Elk. The antlers from tip to tip measure about ten feet. Subsequently more men were engaged at the same place, when the greater part of a large skeleton was laid bare. The skull and horns were removed to Rosemount House. On previous occasions remains of this animal have been exhumed in this part of County Down. The skeleton was dug out of a lake deposit west of Scrabo Hill, and within two miles of Newtownards. A complete skeleton was discovered between Newtownards and Donaghadee, and a large specimen was found in Shell Marl, near Quinten Castle, Portaferry.

The Royal Theriotrophium near the Tower of London.—Willughby, in 1678, describing the young of the Golden Eagle, which he terms "the Golden Eagle with a white ring about its tail" (*Ornithology*, p. 59), observes:—"We saw three birds of this sort in the Royal Theriotrophium near the Tower of London, and a fourth in St. James's Park, near Westminster." Is there any contemporary description of this "Theriotrophium," or Tower Menagerie, extant? if so, where may it be found? Pepys has an entry in his 'Diary,' under date 3rd May, 1662, which thus refers to it:—"To dinner to my Lady Sandwich, and Sir Thomas Crew's children coming thither, I took them and all my Ladys to the Tower and showed them the lions, and all that was to be shown."

• **Ossiferous Cave near Cappagh, Co. Waterford.**—In 'The Zoologist' for 1879 (p. 331) Mr. R. J. Ussher gave an account of the discovery of an ossiferous cavern near Cappagh, in the Co. Waterford, which he was then engaged in exploring in company with the late Prof. Leith Adams and Mr. G. H. Kinahan. The results of this exploration, geological, zoological, and archæological, have since been published in a most interesting memoir,

printed in the first volume (second series) of the 'Scientific Transactions of the Royal Dublin Society,' to which our readers would do well to refer. The report embodies "Preliminary Remarks," by R. J. Ussher; "Physical Features of the Valley between the Blackwater and Dungarvon Bay, with a List of the Caves," by G. H. Kinahan; "Structure and Contents of the Ballynamindra Cave," by R. J. Ussher; "Animal Remains," by A. Leith Adams; "Implements," by R. J. Ussher; and a summary and general conclusions. The Report is illustrated with a map of the district, plans and sections of the caves, and plates of the more remarkable implements and animal remains discovered.

Shakespeare's Animal Lore.—Miss Phipson, of the New Shakespeare Society, has finished her book on 'The Animal Lore of Shakespeare's Time,' which is announced for publication in the spring.

Dr. Johnson on the Glow-worm.—Dr. Johnson informed Boswell that one of his first essays was a Latin poem on the Glow-worm, but his biographer omitted to ask where it was to be found. Has this been discovered?

The Great Auk formerly eaten in Lent.—Sir Patrick Walker, in a note communicated to Beekwith for his edition of Blount's 'Ancient Tenures' (p. 413), says:—"There is a bird nearly as large as a goose, called an Auk, the *Alca* of Linnæus, which was allowed at one time to be eaten in Lent." What is the authority for this statement?

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

December 7, 1882.—Sir J. LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

The following gentlemen were elected Fellows of the Society:—The Rev. R. Baron, F. O. Bower, J. H. Corry, O. L. Fraser, D. Houston, A. W. Howitt, H. M'Callum, E. A. Petherick, S. Rous, and H. C. Stone.

Mr. G. Brook read "Notes on some little-known *Collembola* and the British species of the genus *Tomocerus*." Tullberg refers to their occurrence in Sweden, but the four species in question (viz., *Achorutes manubrialis*, *Xenyllo maritima*, *Triæna mirabilis*, and *Tomacerus vulgaris*) have not hitherto been accorded a British habitat.

Then followed a paper entitled "Remarks on the genera of the subfamily *Chalcidina*, with synonymic notes and descriptions of new species of *Leucospidina* and *Chalcidina*," by Mr. F. Kirby. The author remarks

that this subfamily is in a very unsatisfactory state, and the tendency of recent authors has been to class the majority of the species under the three genera, *Smicra*, *Halticella*, and *Chalcis*, ignoring the divisions which former writers have prepared, partly on the ground that several genera run into each other, and partly because it is usually considered that characters taken from one sex only are not sufficient to establish a genus. But in the order *Hymenoptera*, where the females frequently far outnumber the males, forming, in fact, the bulk of the species, it seems that the latter objection will hardly hold good. The author thereafter gives a revision of the groups in question, and defines several new genera.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

November 28, 1882.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

Mr. W. B. Tegetmeier exhibited and made remarks upon the skull of a Rhinoceros from Borneo; also the horns of a Buffalo and Deer from the same country.

Mr. J. E. Harting exhibited a specimen of the Eagle Owl, *Bubo maculosus*, said to have been obtained many years ago near Waterford, and preserved in the collection of Dr. Burkitt.

Mr. R. Bowdler Sharpe exhibited and made remarks on some specimens of Swifts from the Congo, and on a specimen of *Machærhamphus alcinus* which had been obtained in Borneo by Mr. Everett.

A communication was read from Prof. Owen, C.B., on the sternum of *Notornis*, and on sternal characters.

A communication was read from Dr. A. B. Meyer, in relation to the adoption by naturalists of an international colour-scale in describing the colours of natural objects.

A communication was read from Dr. W. Blasius, of Brunswick, containing the description of a small collection of birds made by Dr. Platen in the island of Ceram. The collection contained forty-nine specimens, referable to twenty-one different species, one of which was new to the fauna of Ceram.

A communication was read from Mr. E. P. Ramsay, containing the description of a new species of *Monarcha* from the Solomon Islands, proposed to be called *Monarcha (Piezorhynchus) Browni*.

Mr. W. Bancroft Escent read a paper on the acclimatization of the Indian Mungoos, *Herpestes griseus*, in Jamaica. The author explained that the object in introducing the Mungoos into Jamaica was the destruction of the rats, which had committed serious ravages among the sugar and coffee crops. The first Mungooses were introduced in 1871, and so beneficial

was the effect produced that the saving to the sugar and coffee planters now was estimated, at least, at £100,000 a year.

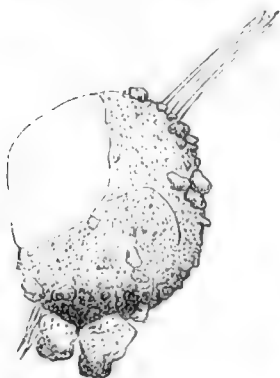
Lieut.-Col. Godwin-Austen read a paper describing specimens (male and female) of *Phasianus Humia*, Hume, which had been obtained by Mr. M. Ogle on the peak of Shiroifur, in N.E. Munipur, upon the Naja Hills.

A communication was read from Mr. A. Thomson, containing the results of some observations made by him during the rearing of a species of Stick-insect, *Bacillus patellifer*, in the Society's Insect House.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

November 1, 1882.—H. T. STANTON, Esq., F.R.S., &c., President, in the chair.

Mr. J. Jenner Weir exhibited living specimens of what he believed to be *Conocephalus ensiger*, Harris, which he had received from Messrs. J. Veitch & Sons, of Fulham Road, in whose hot-houses the locust had appeared in some numbers; they fed readily on flies and spiders, and had thriven in captivity for some weeks. Mr. Weir proposed to place the specimens exhibited in the "Insectarium" of the Zoological Society.



Mr. F. P. Pascoe exhibited a curious spider's nest found on the surface of the ground, attached to a stone, at Cagliari, Sardinia. The nest consisted of a silken bag, covered with earth, with a trap-door; it was quite unknown to the Rev. O. P. Cambridge, and no similar specimens were in the British Museum.

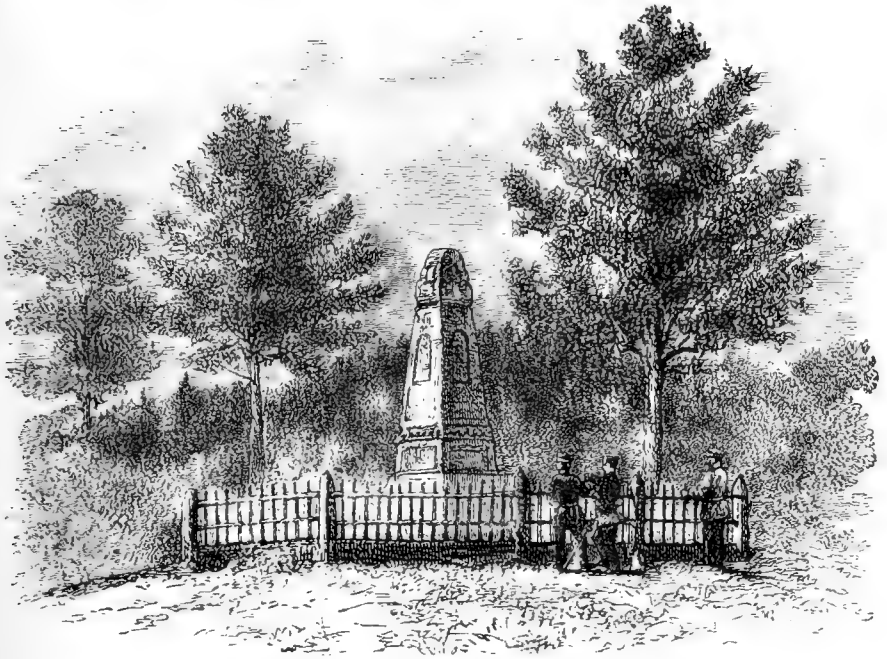
Mr. G. Lewis exhibited specimens of *Syntelia indica*, Westw., *S. histeroides*, Lewis, and *Spharites* belonging to the *Synteliidæ*; of *Figulus*, *Platycerus* and *Alsalus*, n.s., belonging to the *Lucanidæ*; and of *Saprinus*, *Hololepta*, and a new genus of *Histeridæ*; remarking on the similarity of outline in the respective genera of the three families, and referred to his recently published note on this subject (Ent. Mo. Mag. xix. 137).

Mr. A. G. Butler communicated a paper entitled "Heterocerous Lepidoptera collected in Chili by Thomas Edmonds, Esq.: Part IV. Pyrales and Micros." The collection contained seventy species of these groups, many of which were described as new. Several of Blanchard's genera were reviewed, and some extended remarks were made on Zeller's genus *Cryptolechia*. A few supplementary species in groups already treated of were referred to, and five additional species described as new.—E. A. FITCH, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

Siberia in Asia: a Visit to the Valley of the Yenesay in East Siberia: with Descriptions of the Natural History, Migrations of Birds, &c. By HENRY SEEBOHM. 8vo, pp. 298, with Map and Illustrations. London: John Murray. 1882.

THE narrative of Mr. Seebohm's former journey to European Siberia in 1875, when he explored the country lying between the White and the Kara Seas, will be fresh in the recollection of our readers.* Encouraged by the experience then gained and the collections made, and anxious to push on beyond the Ural further



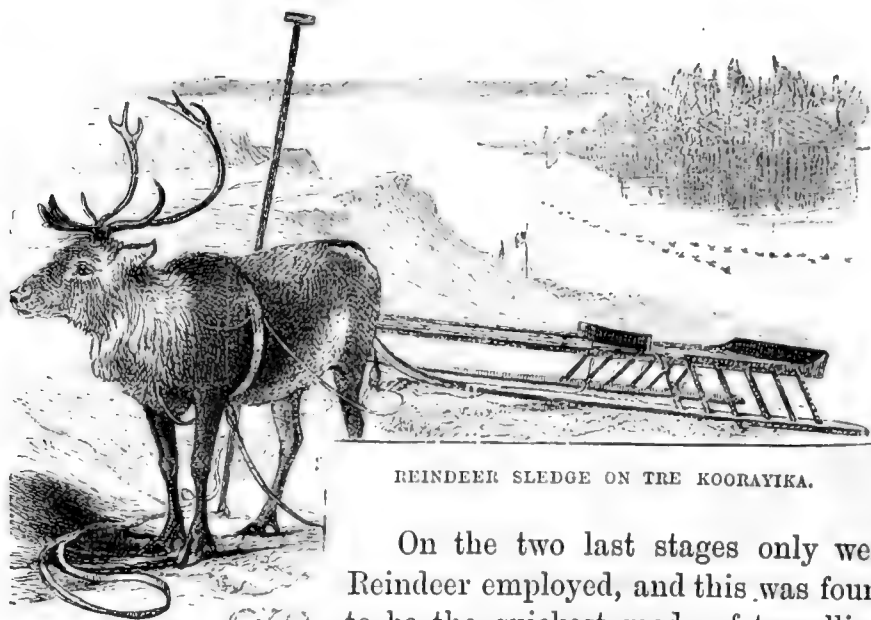
BOUNDARY STONE BETWEEN EUROPE AND ASIA.

to the north-east, in the hope of securing fresh novelties and discovering the breeding haunts of certain birds, whose nidification has hitherto been shrouded in mystery, he resolved to make a second journey, and accordingly set out in March, 1877.

The expedition, as may be supposed, was a very arduous one, for after travelling by rail across Europe to St. Petersburg, and

* See 'Zoologist,' 1881, pp. 75, 116.

thence to Moscow and Nishni Novgorod, he had from that point to continue his journey for nearly 3000 miles by sledge over a country without roads until he reached Yenesaïsk on the river Yenesay, said to be the third largest in the world, whence he had still 1000 miles to travel over the ice-bound water. By the time he had reached the river Koorayika, at its junction with the Yenesay, on April 23rd, he had come 3240 miles from Nishni Novgorod, and, including stoppages, had been forty-six days on the road, during which time he had employed for his sledges about a thousand horses (changed every fifteen or twenty miles), eighteen dogs, and forty reindeer, the total number of stages being 229.



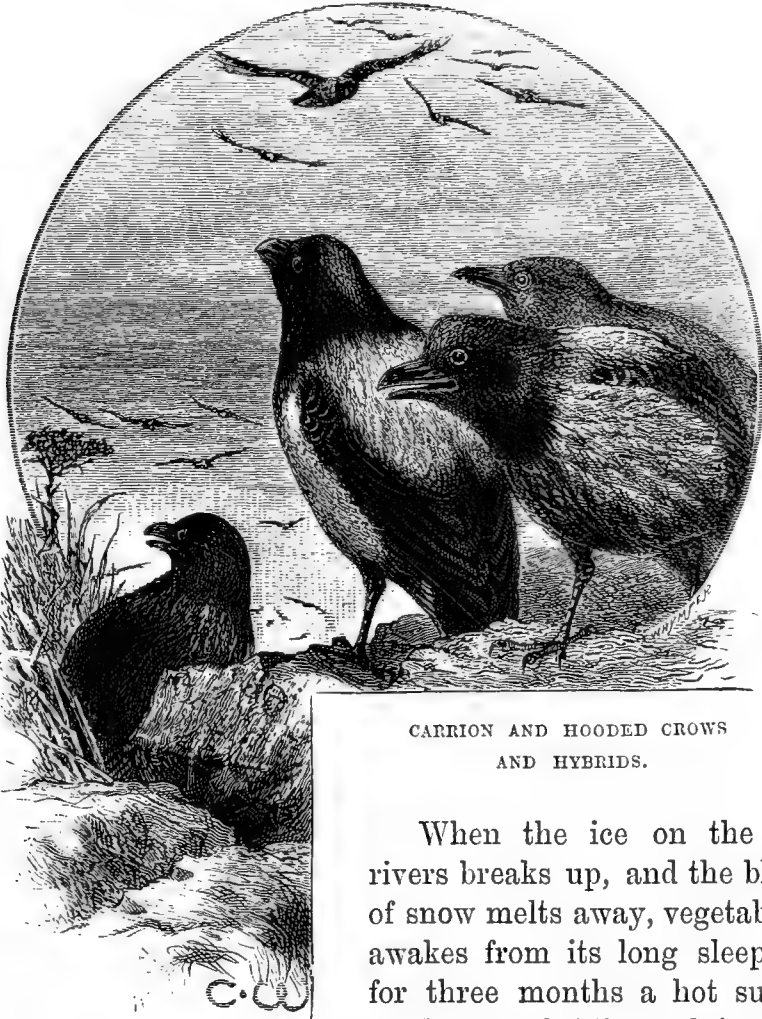
REINDEER SLEDGE ON THE KOORAYIKA.

On the two last stages only were Reindeer employed, and this was found to be the quickest mode of travelling, the Reindeer, with their broad flat feet, getting over the snow-clad surface at a great pace.

Of the life led by the author in this uncivilized country, of the people he met with, and the beasts and birds he pursued and secured, a most interesting account is given. He found it very difficult to get any accurate information about the dress and habits of the various races inhabiting these parts, so numerous are they, and so mixed together and with the Russians; but he gives some curious information on the subject.

The history of animal and vegetable life on the Tundra is very remarkable, and is graphically told by Mr. Seeböhm in

Chapter XVIII. For eight months out of twelve every trace of vegetable life is completely hidden under a blanket of snow six feet thick, and during six months of this time, at least, animal life is only traceable by the footprints of a Reindeer or a Fox on the snow, or by the occasional appearance of a Raven or a Snowy Owl wandering about the limits of forest growth, where it has retired for the winter.



CARRION AND HOODED CROWS
AND HYBRIDS.

When the ice on the great rivers breaks up, and the blanket of snow melts away, vegetable life awakes from its long sleep, and for three months a hot summer produces a brilliant alpine flora, like an English flower garden run wild, and a profusion of alpine fruit. Then various animals come forth from their winter retreat, and the great tide of bird migration sets in.

Although he did not succeed in discovering, as he had hoped to do, the breeding haunts of the Knot, the Sanderling, and the Curlew Sandpiper, Mr. Seebohm nevertheless met with many

interesting species of birds (some, like the Rock Ptarmigan, not known to occur in Eastern Siberia), and found the nests and eggs of others, like the Little Bunting and Mountain Accentor, hitherto undescribed. Amongst the characteristic birds of this part of the world are the Fieldfare, the Siberian Chiffchaff and Stonechat, the Dusky Ouzel (*Merula fuscata*), the Siberian Ground Thrush (*Geocichla sibirica*), the Lapland Bunting, Little Bunting, Ruby-throated Warbler, Waxwing, Pine Grosbeak, Nutcracker, Three-toed Woodpecker, Willow Grouse, Golden Plover, Great Snipe, and Pin-tailed Snipe.

The interbreeding of the Carrion Crow with the Hooded Crow had never been noticed on such a large scale as observed by Mr. Seeböhm, nor had the fact that the hybrids between these two species are fertile been satisfactorily ascertained. Mr. Seeböhm obtained specimens of these hybrids in various stages, showing in different proportions their relationship to both parents.

Through the kindness of Mr. Murray, we are enabled to produce here Mr. C. Whymper's illustration of these birds (given at p. 288), as well as the characteristic sketch by the same artist of the Reindeer sledge (p. 61), and that interesting monument to the traveller, the Boundary Stone between Europe and Asia (p. 11).

Amongst the characteristic mammals of which Mr. Seeböhm saw specimens or procured the skins, were Bears (six roubles the skin), Ermine (ten to fifteen kopeks a skin), Grey Squirrel (same price). The Striped Squirrel (common to both Asia and America) and the Siberian Marten were occasionally offered by the peasants for fifty kopeks to a rouble each. Two skins of the Glutton were bought, one for four the other for five roubles. Otter and Blue Fox (*Vulpes lagopus*) were offered at ten to twelve roubles; the latter, in its white winter garb, at three to five roubles. Mr. Seeböhm made many inquiries for skins of the Sable (which is only found in Siberia) and the Black Fox (a melanistic form of (*V. vulgaris*), but never succeeded in seeing any, they being reserved probably for the Yeneseisk merchants, who would give twenty-five roubles for a Black Sable, and double that price for a Black Fox. The Beaver, it appears, has been extinct on the Yenesay for many years.

It was unfortunate that, having travelled so far, Mr. Seeböhm was prevented from reaching the coast, and investigating the bird-life on the Kara Sea. He considers also that he would

have done better to await the arrival of the migratory birds at Yenesaïsk instead of on the arctic circle. But although he was disappointed in not discovering the nests of some of the birds of which he was in search, and obtaining specimens of others which he had hoped to meet with, the results of his journey in other respects were most satisfactory, and he is to be congratulated upon having returned safely to give this interesting narrative of his travels in a far off and little explored country.

The Fowler in Ireland; or, Notes on the Haunts and Habits of Wildfowl and Seafowl, including Instructions in the Art of Shooting and Capturing them. By Sir R. PAYNE GALLWEY, Bart. With numerous illustrations. 8vo, pp. 503. London: Van Voorst. 1882.

As compared with what has been printed on the kindred sports of Shooting and Fishing, the literature which relates to Fowling is not very voluminous, nor has it kept pace, like the others, with the exigencies of the day. Indeed it is somewhat remarkable that more books were written on the subject before the invention of gunning-punts and breech-loaders than have appeared since. This is not to be explained by assuming a decrease in the number of fowlers; for, owing to the improvements in guns, there must surely be, at the present day, more shooters than ever. Of this number, however, the majority are unquestionably game-shots, and of those who devote themselves thoroughly to wildfowling few perhaps feel themselves competent to write authoritatively on the many important points which would require consideration.

The case seems to be otherwise with Sir R. Payne Gallwey, who, as is well known, has devoted himself for years to the sport on which he now writes, and who, as we gather from his book, has evidently coupled the successful pursuit of wildfowl with an attentive observation of their peculiar habits.

It is not in mere slaughter that the fowler takes delight. The exceeding wariness of the birds renders it extremely difficult to approach them, especially by daylight, and it is the satisfaction that is felt in making this approach, by skilfully manœuvring the punt, which gives such a zest to the pursuit. There is a pleasure, too, in watching the movements of a "company" of

fowl while lying unseen by them, and in noticing at close quarters the characteristic actions of the different species.

The art of Fowling has many branches. You may build a punt, single- or double-handed as required, mount a punt-gun with all the modern improvements and appliances, and spend your days and nights upon the water. Or you may eschew punts and keep ashore, confining your attention to Snipe, Duck and Teal, with an occasional shot at Plover or Curlew. You may construct a decoy, and take hundreds of fowl in a season without firing a shot; you may take Wild Geese in pitfalls, or Plovers in nets, or you may, if so inclined, relieve the monotony of a walk across the marshes by setting snares for Snipe and Woodcock.

On all and each of these subjects Sir R. Payne Gallwey has much to impart, and since his remarks are based on personal experiences, it is perhaps needless to say they are thoroughly practical.

From the naturalist's point of view, with which we are here chiefly concerned, his book is a very attractive one, for it contains many interesting and hitherto unpublished observations on the breeding of wildfowl in Ireland; on the habits of sea-fowl as observed at the Skelligs and other remote haunts; on the migration of birds as seen by the lighthouse-keepers; and on the present distribution of some of the rarer mammals of Ireland. The chapters which treat of these subjects are embellished with numerous woodcuts by Mr. Charles Whymper, most of which have been admirably drawn from nature, while seventeen full-page illustrations, by the same artist, depict very skilfully some of the various incidents of a fowler's life.

Of the practical part of the book—namely, that which treats in detail of yawls and cutters, punts and punt-guns, with all their modern and improved appliances—we need say no more than that the subject appears to be exhaustively dealt with. For our own part we have been more entertained with the mode described of constructing and working a decoy (Chapter IV.), and with the directions given for making and using a plover-net (Chapter X.), contrivances which show of what ingenuity the human mind is capable when striving to outwit the keen natural instinct displayed by wildfowl in their efforts at self-preservation.

The Modern Sportsman's Gun and Rifle; including Game and Wildfowl Guns, Sporting and Match Rifles, and Revolvers. By J. H. WALSH ("Stonehenge"), Editor of 'The Field.' In two volumes, 8vo. Vol. I., Game and Wildfowl Guns, pp. 459. With numerous illustrations. London: Horace Cox, 'The Field' Office. 1882.

THERE must be few sportsmen at the present day who have not experienced considerable difficulty in making choice of a new gun. The improvements which have been made in breech-loaders since the introduction of the Lefauchaux pin-fire gun have been so numerous and so varied, that it is no easy matter to decide upon the respective merits of the different actions; indeed only those who have paid close attention to the subject, and have carefully examined and tested the so-called novelties in guns as they have appeared, can consider themselves competent to express an opinion in the matter.

Mr. Walsh's long experience in this respect, coupled with the admitted efficacy of the tests which he has devised and applied, and which have been exhibited at the various 'Field' trials of guns, has specially qualified him to write authoritatively on the subject; and his opinion, therefore, as set forth in the work before us, must deservedly carry weight.

As a text-book on game and wildfowl guns, this volume should be read by every man who shoots, whether he is in search of a new gun or not; for it contains an illustrated history of guns for the last twenty years, showing the successive improvements which have been made, the details of which are most instructive.

To give some idea of the ground which is covered by this treatise, we may state that, following the definition of a shot-gun, the author points out the requirements of a sportsman's gun for his varied purposes, explains its construction, and the trials of *safety* by what is called "proof," and *efficiency* by shooting at a target. He describes the lock in all its details, with the various modifications of it which have been designed from time to time, and discusses fully the important subjects of choke-boring and regulating. Guns with hammers and those without them are fully considered, and subsequent chapters deal successively with cartridges, powder, wads and shot, and the not unimportant

questions of cleaning and repairing. The second portion of the volume is devoted to punt-guns and wildfowl shoulder-guns, and concludes with a useful "glossary of terms."

A book so practical in its details commends itself not alone to stay-at-home shooters; sportsmen who may be going abroad, and naturalists who may contemplate a collecting tour, will find in it information likely to be of service to them.

A History of British Birds. By the late WILLIAM YARRELL. Fourth Edition, revised to the end of the *Picidae* by Prof. NEWTON, F.R.S. Continued by HOWARD SAUNDERS, F.L.S. Part XV. London: Van Voorst. 1882.

WE are glad to see that another part of "Yarrell" has appeared, under the new editorship of Mr. Howard Saunders. This part finishes the *Picidae*, with which group (as every ornithologist will regret) Professor Newton's revision ends. Mr. Saunders has now revised the Pigeons, with several skilful emendations, and has written an entirely new chapter on Pallas's Sand Grouse. He gives a *resumé* of the facts connected with the remarkable visitation of this bird to the British Islands in 1863, prefaced with some remarks on the position of the species in the *Systema avium*, pointing out its structural peculiarities and apparent affinities. Referring to the views of previous writers who would class the Sand Grouse, on the one hand, with the Pigeons, on the other hand with the Plovers, he "thinks it advisable, on consideration, to adopt for the Sand Grouse the separate order to which Prof. Huxley gave the name of *Pteroclomorphæ* (Proc. Zool. Soc., 1868, p. 303), subsequently modified by Mr. Selater to *Pterocletes* ('Ibis,' 1880, p. 407)."

The part before us concludes with a portion of the article Capercaillie, in which will be found some interesting remarks on the derivation of the name (as variously spelled "capercaillie," "capercally" and "capercailzie"), and on early notices of the bird by mediæval writers.

THE ZOOLOGIST.

THIRD SERIES.

VOL. VII.]

FEBRUARY, 1883.

[No. 74.]

ON SOME REPTILIA AND BATRACHIA OBSERVED IN NORMANDY.

BY G. T. ROPE.

THE Slow-worm, *Anguis fragilis*, appears to be of common occurrence in Normandy; I met with it at Oisel, and again in the neighbourhood of Dieppe. A single specimen of the Viper, *Pelias berus*, was obtained in a large wood containing open patches of heath, situated near La Bouille, a village on the Seine, a few miles below Rouen. We met with only two or three specimens of *Rana temporaria* during the month spent in Normandy, *R. esculenta* being far more abundant.

The Edible Frog, *Rana esculenta*, was abundant everywhere, frequenting stagnant ponds, but was not found in running brooks, or even in the ditches communicating with them. It is shy and wary in the extreme, the sense of sight, and probably of hearing also, being apparently well developed: it is only, indeed, by using the greatest caution that a glimpse of the handsome green-jacketed little fellow can be had as he sits on the bank of the pond, perhaps a foot or two above the water, ready, at the faintest suspicion of danger, to take one flying leap into the pond, going at once to the bottom. In that element, however, he seems to feel more secure, and many a sly-looking head may there be seen with eyes and nose only above the surface, ready to disappear at the shortest notice. In large ponds, however, these frogs may often be seen floating at ease on the surface at

a safe distance from land. There is a decidedly crafty expression about the countenance, which, combined with a habit of winking or snapping the eyes at their would-be captors, is irresistibly ludicrous. Some of these frogs were of a size fully equal to that of two large English frogs (*R. temporaria*). I managed, with difficulty, to catch some seventeen specimens, which I brought alive to England, hoping, should the herons and rats permit, to establish a colony of them here. They vary considerably in colour and markings, the yellow lines on the back being much more pronounced in some individuals than in others; in our two largest specimens they were scarcely of a lighter tint than the rest of the back, and in another the upper parts were of a rich brown instead of green. Owing to their extreme shyness and vigilance they were very difficult to catch with a hand-net, but a bent pin and worm proved more efficacious, and was the means of bringing several to land. Although the noise these frogs make in August is nothing compared with that heard in early summer, they are not altogether silent, but in places where they are numerous may be heard giving tongue in a subdued manner if cautiously approached. We found the tadpole of this species in immense numbers, in ponds near Rouen, and at La Bouille, a few miles lower down the Seine; they were of large size, equalling a small cherry in bulk, and with the tail measured in many cases nearly two and a half inches. In colour they were of a light greyish brown above, having on the back and the sides of the tail a few small blackish spots; the under parts thickly studded with minute white specks. They were in various stages of development, some having as yet no signs of limbs, while others had acquired both pairs, and had very little tail remaining. Some of these youngsters were ready to leave the water, and as their colour at this period of existence differs materially from that of the adult, I will attempt to describe that of a specimen I have now alive:—Upper parts light brown or grey, lightest on the head, covered with minute warts of a lighter tint; a ridge of larger warts of a light colour extends low down along each side, reaching nearly to the hind legs; lips, sides of head, and legs, speckled with dark brown; under parts very thickly covered with minute whitish warts; thighs below, dark flesh-colour.

In a small roadside pond near La Bouille I found *Bombinator igneus*, and obtained ten specimens, but saw it nowhere else, not having the opportunity of examining many ponds. Those I saw were generally near the edge of the water, with only the head or part of the head above the surface, and looking so much like little bits of mud that it was no easy matter to make them out. On the 23rd of August I obtained a young one of this year's hatch, having still a little bit of tail remaining, but could find no tadpoles of this species, although the pond contained an immense number of those of *Rana esculenta* and of some species of Newt. The relative difference in size between the male and female *Bombinator*, seems to be about the same as that of the Common Toad. Those I brought to England feed readily on small earthworms. As soon as they are aware of the presence of food they become very much excited, and are quite as likely to seize one of their companions by the leg as their legitimate prey. The same thing is very noticeable in the case of the Smooth Newt, *L. punctatus*. The strange habit these little creatures have of throwing the body and limbs into the most violent contortions, when suddenly startled, is very remarkable, and gives them for the time being a most uncanny appearance. They suddenly flatten and depress the body in a wonderful manner, at the same time closing the eyes and throwing up the head, and all four limbs into the air, so as to form a sort of cup, of which the middle of the back is the deepest part; this gives them somewhat the appearance of a dead frog or toad which has been dried up by the sun, and the very uninviting appearance they present at such a time is possibly a valuable source of protection to them from their enemies. The thick and somewhat clumsy appearance of the hind feet is much more observable in some specimens than in others.

Bufo vulgaris appeared to be decidedly less numerous than in England, but possibly the time spent in Normandy (less than a month), may have been scarcely long enough to justify such an opinion. Few specimens were found and those mostly immature. Some young fry just leaving the water were seen on the banks of a pond at St. Pierre. In common with some of the other batrachians, the Toad is very subject to a loathsome and deadly disease, the cause and nature of which I know nothing, but which generally shows itself first in the form of a sore place

on the nose, spreading gradually all over the face till it is consumed away. This summer I discovered a large female Toad in which the whole face up to the eyes was literally gone, the cavity of the skull being filled with maggots as large as the animal's toes, yet the poor animal was still living. I have noticed the same disease, but less frequently, in Frogs (*Rana temporaria*), in *Triton cristatus* and *alpestris*, and in *Salamandra maculosa*. The Newts when attacked waste away very rapidly, and in their case the sores are by no means confined to the head, but break out in various parts of the body.

Notwithstanding the diligent search made for Salamanders, I was unable to find a single one until the day before leaving for England (September 1st), when I accidentally came across the crushed body of a remarkably large female *Salamandra maculosa* which had recently been run over in the road at St. Aubin near Dieppe. Considering the lateness of the season I was surprised to find that this individual contained eggs, some of which were hatched, the young animals resembling Newt-tadpoles. There was a pond at a short distance from the spot where it had been killed, and it may have been journeying in search of such a place, to serve as a nursery for its offspring, when unfortunately destroyed by the wheel of some passing cart. I have had a pair of Salamanders for twelve months in confinement, but as yet have been unsuccessful in getting them to breed. Their favourite food is earthworms, and I have never seen them swallow anything else, with the exception of very small slugs, and in one instance a small white grub.

A few specimens of *Triton cristatus* were obtained at a pond at La Bouille, near Rouen, in company with *Triton alpestris*, the latter species being far the more abundant. I obtained here a variety having a large portion of the under parts black.

The commonest Newt by far to be found in Normandy, in August, was *Triton alpestris*, and I managed to bring home alive to England about thirty specimens, several of which however have since died of the disease mentioned above, many having the toes and parts of the feet completely gone. They were fed on earthworms, which they ate readily, but possibly they suffered from the want of some other food. Not being perfectly sure of the species of this Newt, I sent some specimens to Mr. Southwell, of Norwich, who kindly examined them, confirming my opinion as

to their identity. I found the tadpoles either of this species or of *Triton cristatus* (or perhaps of both) in various ponds in Normandy. The Newts were generally seen in the shallow parts of the pool, either resting or crawling along the bottom.

Lissotriton punctatus appeared to have mostly left the water, several specimens being found on land, underneath large stones, whereas I only took one from the water. I recently kept some Newts of this kind in a box with a glass front, partially filled with bark, rotten wood, and moss, with only a small pan of water. They lay hid among the moss all day, but at night were very active, and often visited the water. Excepting during the spring both this species and *T. cristatus*, according to my experience, pass more time on land than in water, but require a considerable amount of moisture notwithstanding. In confinement they are very voracious, and often seize objects far too large for them to swallow. I have seen two of these little creatures, of about equal size, striving manfully to swallow each other. On first attaining the perfect state these Newts are extremely small, being often much inferior in bulk to the full-grown tadpole.

FIELD NOTES IN NORWAY IN 1882.*

BY THE REV. H. H. SLATER, F.Z.S.

Member of the British Ornithologists' Union; Vice-President of the
Yorkshire Naturalists' Union.

(Concluded from p. 14.)

LONG-EARED OWL, *Asio otus* (L.)—I saw one in the pine woods above Lillehammer, the only Owl I actually saw alive in Norway, though I once heard a Tawny Owl.

HEN HARRIER, *Circus cyaneus* (L.)—I saw a pair in the marshes at Fokstuen for several days, and generally in exactly the same spot, so I went to try and find the nest, which I was pretty certain was there. In this I was unsuccessful, but on one occasion the male attempted to mob me, and was secured. On my arrival at Christiania I was pleased to find that no adult male had been obtained in Norway for some years, though immature

* These notes were made in the spring of 1882, not 1881 as stated on p. 4.

examples occurred occasionally, so I had the pleasure of presenting my specimen to Professor Collett for the new series of Norwegian-killed birds he is making for the University Museum—and a splendid series it is, which every ornithologist who sees must admire. I am doubtful whether to attribute a bird I saw at Laurgaard, beating the marshes by the river, to this species or to *C. aeruginosus*. A Harrier it certainly was, and I am inclined to think of the latter species, as its colour seemed to be of too dark a red-brown for any other species. I am only inclined to hesitate by the extreme rarity of the Marsh Harrier in Norway.

BUZZARD, *Buteo vulgaris* (Leach).—I saw one flying over the town at Lillehammer; my attention was called to it by the great commotion made by White Wagtails and Swallows as soon as they saw it.

ROUGH-LEGGED BUZZARD, *Archibuteo lagopus* (Gm.)—I am inclined to attribute to this species a bird I several times saw near Laurgaard, but I was never near enough to be certain. I paid some attention to what I think must have been the cliff between Fokstuen and Hjerkin, where Mr. Mitchell took the nest of this bird ('Zoologist,' 1877), but could not see that it was tenanted.

SPARROWHAWK, *Accipiter nisus* (L.)—Not uncommon. Noticed at Lillehammer, Laurgaard, and on the Dovre.

MERLIN, *Falco aesalon* (Tunst.)—A pair near Hjerkin seemed by their conduct to have a nest near at hand.

KESTREL, *F. tinnunculus* (L.)—Not uncommon; I saw more near Laurgaard, I think, than anywhere else.

PINK-FOOTED GOOSE, *Anser brachyrhynchus* (Baill.)—Whilst I was at Lillehammer a pair were shot by night out of a flock of ten making their way up the Logen to breed somewhere in the north. Both were females, and the one I bought had a conspicuous white line round the base of the upper mandible, an unusual circumstance in this bird. On dissection well-developed eggs were found, which, from their size, would have seen the light, under ordinary circumstances, in a week or ten days. Prof. Collett, to whom I showed the skin, was surprised at this circumstance, as this bird is rare in Norway, usually seen on migration only on the west coast, and has never been satisfactorily proved to have nested in the country.

MALLARD, *Anas boschas* (L.)—Common wherever there are suitable spots.

TEAL, *Querquedula crecca* (L.)—Common, especially at Fokstuen, where it was laying.

SCAUP, *Fuligula marila* (L.)—I saw several Scaup on the Miösen Lake, near Lillehammer. A large flock, of males only, on a lake near Fokstuen, the females being apparently sitting.

TUFTED DUCK, *F. cristata* (Leach).—I am pretty certain I saw a pair near Fokstuen, but was unable to get near enough to be quite sure. With an india-rubber boat great things might be done amongst the duck at Fokstuen. I never cared to shoot them for food (although food was neither plentiful nor varied at that station), but I did shoot a couple of Teal for the Sunday dinner of my wife and myself at a time of great scarcity. I may as well here advise intending visitors to Fokstuen to take some bread or biscuit and tinned meat and soup with them; all that can be obtained there is coffee, beer, fladbrod (rye-bread made the summer before), occasional eggs, and grayling, which at our visit were out of season, and kept getting staler and staler every day.

GOLDEN-EYE, *Clangula glaucion* (L.)—I saw an adult male on Lake Miösen from the steamer, when first arriving at Lillehammer, but never satisfactorily identified the bird afterwards.

VELVET SCOTER, *Oedemia fusca* (L.)—I saw a few on the Miösen Lake, several small companies on the still parts of the Logen, on our way up the Gudbrandsdal, and a good many on the lakes at Fokstuen.

COMMON SCOTER, *O. nigra* (L.)—I saw many on the Miösen, and a great number at Fokstuen, and elsewhere on Dovre.

GOOSANDER, *Mergus merganser* (L.)—I saw several on the Miösen, and a pair in the marshes at Laurgaard. There were some Mergi at Fokstuen, but I do not know of which species.

RED-BREASTED MERGANSER, *M. serrator* (L.)—I obtained a fine male in breeding plumage at Lillehammer, but did not identify it elsewhere.

RING DOVE, *Columba palumbus* (L.)—Plentiful at Lillehammer and in the Gudbrandsdal; not seen on Dovre.

PTARMIGAN, *Lagopus mutus* (Leach).—First met with on the fells above Laurgaard, where it seems fairly abundant in suitable places; also near Fokstuen.

WILLOW GROUSE, *L. albus* (Gm.)—Pretty plentiful in the birch region on the fells, and occasionally met with in the edge of the fir-growth. I saw a good many at Laurgaard, also at Fokstuen. The similarity of the male bird's call when rising to that of the Red Grouse is striking to one accustomed to the latter.

HAZEL GROUSE, *Bonasa betulina* (Scop.)—I did not meet with this bird alive, which, I believe, is not an uncommon experience with foreigners in Norway, but I bought a male (snared, of course) in Lillehammer.

CORN CRAKE, *Crex pratensis* (Bechst.)—I heard the note of this bird at Naersness, and once at Lillehammer, where it seemed uncommon.

COMMON CRANE, *Grus communis* (Bechst.)—Inasmuch as Mr. Mitchell (*l. c.*) never saw a Crane at Fokstuen during his visit, I did not particularly expect to do so either. On the second day, however, after my arrival (June 2nd), I was wading through the swamps below the station, and wondering what would turn up next (for Fokstuen is a place, ornithologically, of pleasant surprises) when my eye fell on a small bare turf island in the middle of a swampy pool, about sixty yards distant, where I at once caught sight of something like a large egg. I approached, full of anticipation, and found two large eggs, and Crane's to boot; whilst looking at them, not without pleasure, my attention was caught by a faint chirp, which proceeded, as I found at length, from one of the eggs, the chick whereof had broken the shell, and was complaining, as I took it, that he could not get out. So I concluded that the egg I was holding was addled (as it was), and thought it best, considering the intense heat of the sun, to take it at once for fear it might burst. So I retreated to an adjacent bush, where I crouched down, suspending my gun in the willows, in the hope that the parent would return whilst I was employed in cleaning and blowing the egg, to gratify my curiosity to watch her at her nest. Soon I heard her cry, like a distant bugle, and made her out approaching stealthily in a somewhat crouching attitude. However, she did not come near (having, as I imagine, caught a flash from my field-glasses), and, after wandering about for some time, she got up and flew round in a wide circle, being shortly joined by her mate, and both trumpeting loudly. I thought their cry the finest I had ever heard from any bird's throat, but doubtless the wild and solitary spot, surrounded

by a circle of snow-covered hills, materially heightened the effect. They soon flew off altogether, and, having watched them till about a couple of miles off, I went to take another look at the nest. It consisted of about as many short willow sticks and reeds as might be grasped in one hand, scattered in a loose untidy ring round the eggs, which lay on the bare flat ground, there being no material depression. I then went my way. The next day I took a look in passing, and found the young bird quite hearty, and the empty egg-shell lying near. Two days afterwards I went again and found the nest deserted, and the chick dead, which I manufactured into a respectable specimen of the Crane in down. The removal of the addled egg must have disturbed the minds of the old birds after all, added to the fact that the nest was in the most productive part of the marsh, and they must have heard my gun every now and then not far off. I was, however, much surprised to see the old bird rise close to the nest, about a hundred yards from me; my sudden impulse was to fire at her, without any visible result. Later the same day I was about two miles to the S.W. of the nest, and heard the then familiar cry of the Crane still further towards Dombaas, and soon made out two Cranes about half a mile or more from me, and, as they were on lower ground than I, and their movements clearly visible, I lay down and watched them with my glass. To my surprise their spirits were so little depressed by recent events that they were actually building a new nest two miles and a half from the old one. I could see one of them picking up and arranging some short sticks, apparently in a very fastidious way, while the other stalked slowly about, with erect neck, trumpeting at intervals; every now and then the one building uttered a note also. I had no doubt at the time (though I was not so certain afterwards, for reasons which will appear) that they were the same pair of birds whose nest I had found, as I had previously remarked that their two voices were pitched at an interval of "a third" apart, and I remarked the same thing now. The next day we all left for Hjerkin, and I walked on in advance of the rest. When about four miles from Fokstuen, the day was so hot that I sat down and took a look around, and my pleasure was great to see four Cranes together on an island in the midst of the valley less than half a mile from the road where I was. I watched them for half an hour or so, when the others came up, and noticed that whilst three of

them gave themselves up to feeding and arranging their feathers (giving great attention to the tail-plumes), the fourth stood perfectly still, with erect neck, as sentry. The rest of our party examined them also, and the remark was made that they looked "almost as large as Ostriches." They certainly looked very large.

GOLDEN PLOVER, *Charadrius pluvialis* (L.)—I did not find this bird as common on the Dovre Fjeld as I expected. I saw three pairs feeding on the marshes at Fokstuen in the evening; at Hjerkin I found a nest, from which, as I wanted a specimen in full summer dress, I shot the bird. There were two things noteworthy; that, though the eggs were fresh, the bird lay on the nest till almost trodden on, which conduct generally indicates, with the Golden Plover, that the eggs are not far from being hatched; secondly, that the sitting bird, as I found on dissection, was a male. I have never seen it remarked that the male Golden Plover assists in incubation.

DOTTEREL, *Eudromias morinellus* (L.)—I only saw this bird once; one of the pairs of Golden Plover, which I have mentioned as feeding in the marshes at Fokstuen, was accompanied by a solitary Dotterel.

RED-NECKED PHALAROPE, *Phalaropus hyperboreus* (L.)—Pretty common in the marshes at Fokstuen, but showing a preference (as many birds do there) for one spot. Not breeding when I was there, as evident from the ovary of one female. Very tame, pretty little birds, looking on the water like miniature ducks, from their plump shape and carriage. When you come upon them in the marshes they rarely rise, unless you throw something at them, but swim about in a pool ten yards from you, and retire behind a tussock to hide if you make demonstrations; they were such nice little birds that I could hardly persuade myself to shoot any. I saw none at Hjerkin.

WOODCOCK, *Scolopax rusticola* (L.)—Of this bird I only found the dried remains in a small "gill" near Lillehammer.

GREAT SNIPE, *Gallinago major* (Gm.)—Pretty common at Fokstuen in the marshes, the only place I saw it alive, though I picked up a freshly-killed female under the telegraph-wires near Hjerkin Station. I found one nest at Fokstuen, on a hummock of turf in a dry part of the marsh, placed under a bush of *Vaccinium uliginosum*; the bird rose silently (as the Great Snipe

always does) and fluttered away; there were four eggs. On another occasion, as I was going through the marsh, I heard distinctly a bird snapping its bill. Going to the spot whence the sound proceeded, I flushed a Great Snipe; I fancy it was snapping its bill at me.

COMMON SNIPE, *G. caelestis* (Fr.)—I put up a pair from a small marsh at Fokstuen, the only ones I saw there. I saw one at Lillehammer, and heard another drumming at Hjerkin.

BROAD-BILLED SANDPIPER, *Limicola platyrhynchos* (Tem.)—Pretty plentiful at Fokstuen, and just below the station at Hjerkin. I did not find the nest, nor did the ovary of a female I procured at Fokstuen lead me to suppose I should, though at Hjerkin—which, both in Ornithology and Botany, is decidedly earlier than Fokstuen, although the places are, as near as possible, at the same altitude (the ornithologist will do well to take Hjerkin first)—one contained an egg which would have been laid in a few days. They are not easy to shoot, as they have a perplexing way of rising at your feet in a great hurry, and flying off as if they meant to go for miles, and then, just as they are at a right distance to kill, dropping down suddenly, and causing you to shoot thereby over their heads. They frequent grassy and sedgy parts of the marsh where the ground is neither too wet nor the vegetation too high, never being seen actually in the water or amongst bushes, but where the soil is such that an ordinary man's foot would sink a couple of inches into the mud at each step. They lie, usually, very close, rise with a low but shrill whistle, and almost invariably are in pairs; in wet and windy weather, however, like most other birds, they become very wild, and I have seen them at such times go through the same motions as a drumming Snipe, the descending motion with quivering wings being accompanied by a high tremulous whistle. Those shot at Fokstuen have a slight rufous tinge in the breast, due to the iron oxide in the wet soil they frequent.

COMMON SANDPIPER, *Totanus hypoleucus* (L.)—Common by every stream and lake. They made their appearance at Lillehammer on May 17th.

GREEN SANDPIPER, *T. ochropus* (L.)—I saw several near Lillehammer and several near Laurgaard, but for some reason or other I did not see it at Fokstuen in anything like the plenty I had expected.

WOOD SANDPIPER, *T. glareola* (L.)—I saw one at Lillehammer, and one or two at Laurgaard. At Fokstuen they were very plentiful, but not breeding when I was there; at Hjerkinns they were equally abundant in the marsh below the station. I may as well add, for the benefit of ornithologists visiting Hjerkinns, that that marsh below the station is dangerous in places, though not at the end nearest the station. I sounded in one place with a pole, and found that under the thin and quivering crust of matted vegetation on which I stood were about six feet of water and thin mud. I may mention that for marsh-work in Norway I found a pair of ordinary waterproof fishing-stockings excellent, and wore with them a pair of light india-rubber brogues, which latter should be laced, or they may be drawn off the foot by the mud. They are more pliable than long leather boots, and lighter; you can kneel down in them comfortably in shallow water, and, when not in wet places, can let them down, when they are quite cool. They are also a delightful covering when travelling by carriage or stolkjærre in wet weather.

COMMON REDSHANK, *T. calidris* (L.)—Plentiful, but local, at Fokstuen; one pair in the marsh below the station at Hjerkinns.

LESSER BLACK-BACKED GULL, *Larus fuscus* (L.)—I saw a flock of about twenty on May 16th at Lillehammer, frequenting the islands at the mouth of the Logen, apparently intending to breed there; but as the river kept rising, owing to the melting snow, they went in a few days.

BLACK-THROATED DIVER, *Colymbus arcticus* (L.)—I saw a great many on the Miösen Lake as we went up in the steamer to Lillehammer on May 16th. Going up the Gudbrandsdal I saw a good many on the stiller reaches of the river; in one place of the kind there were four, which seemed quite unconcerned at the sight of five carriages going along only about eighty yards from them. At Laurgaard I saw several on hill-tarns, but none on the Dovre Fjeld; had I had a boat at Fokstuen I should probably have seen some.

GREAT NORTHERN DIVER, *C. glacialis* (L.)—Several near the islands at the mouth of the fjord at Christian Sand on May 7th.

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from p. 24.)

THE tank and water-supply are of greater importance still. Nearly all snakes love to drink and bathe frequently, often lying in the bath for days together, while some (such as the Anaconda) spend more time in the water than out of it. This habit is more noticeable among big serpents as a class than among small ones. The tank, therefore, should be roomy, so that the largest specimen may be able to get bodily into it with comfort; it should be placed at the extreme back of the cage, leaving no interval between it and the hinder wall; the bottom must not be sunk below the level of the floor; and it will be a great advantage to have the front of it made of glass. Then the reptiles are never hidden, no matter how deep the tank may be—and a tolerable depth ought to be allowed, certainly not less than a foot clear, to permit of a sufficiency of water at all times, without overflow when the snake's bulk is submerged; their behaviour in that situation, interesting in many ways, can be observed likewise. Here, too, the glass must be thick; it may be set, for ornamental appearance, in a frame of rough wood or (better) stone. If a lid for this tank can be contrived, either to slide in from the outside through a thin slit in the end, or hinged at the back and worked by a pulley from above, it may be serviceable to separate the occupants at feeding-time, or to shut in a mischievous customer while cleaning out the cage. Soft water is best for them, and ought to be made tepid by lying in a cistern placed upon some part of the heating apparatus before it is admitted. One of the greatest defects of the old reptile-house at the Regent's Park Gardens is the want of means for warming the water outside the cages; it flows in cold, and remains some time before it is raised to a proper temperature, since it receives heat only from the general surroundings. The disadvantages of such a state of affairs are numerous. Snakes at a high temperature plunge suddenly in, and are not only thereby often induced to regurgitate their food, but may take a fatal chill, especially if on the point of shedding their skins; or they may become so numbed and paralysed as to lie there and die. The

recognition of these facts naturally leads the keepers to delay changing the water as long as possible, particularly in the large tanks, which take a very long time to get warm, and where the Pythons, Boas, and Anacondas constantly bathe; and it becomes foul in consequence—probably the lesser of the two evils, though doubtless both conditions have something to do with the production of that serious disease of the mouth to which I shall refer hereafter. The water should be changed and the tanks cleansed frequently.

The heat, as I have said, is best applied to the cage itself rather than to the apartment in which it stands; and there is another reason for this, besides the one mentioned at the commencement of this chapter. The very solidity of construction which renders the den admirably calculated to keep in and economise any warmth generated in its interior, serves often to *exclude* that of the outer atmosphere. I have remarked this in the Reptilium of the Jardin des Plantes in Paris. The building is heated by enormous stoves, and becomes at times quite oppressive to the visitor. But the cages, which are glazed on two sides and, in the case of the larger snakes, are so arranged as to be visible from the outside of the house, have no special appliance; and one is quite surprised, standing in that sultry air, to find on handling the reptiles how cold they are. As to the mode of application, it is difficult to lay down any rules or offer advice, since this must depend in every case upon the situation and opportunities. Hot water is decidedly to be preferred to hot air, and if a gas-stove is used it ought to be placed outside the building or in such a position that no vapour may contaminate the air within the cage. Pipes should run underneath the flooring in all directions, and at a very slight depth from the surface (especially if it be composed of Portland cement), as there will be a bed of gravel over this; it is advisable also to have a pipe at the upper part of the cage, so that the reptiles may have an inducement to leave the floor and take plenty of exercise. This upper pipe had better be buried in the wall or walls along which it passes; if exposed, it must be very carefully shielded with thick felt, so that no more than a warmth comfortable to the hand can penetrate. A gentleman writes to me from the north of Germany that he has improved upon this detail, which I sent him when he was building a vivarium for

tropical serpents a year ago, by tunnelling the tree for the passage of a hot water-pipe with good results.

The actual degree of temperature will vary in accordance with that of the natural habitat of the snakes, their progress of acclimatization, the time of year, and the exposure of the cage; heat will of course evaporate more rapidly through four glass sides than through one, and from a structure situated in the open air than from one under cover. Such a position as the former is not likely to be chosen, nor is it to be recommended in any climate subject to severe winters; the difficulty in keeping up the temperature in all but the hottest summer weather is immense, the glass is perpetually dimmed by moisture, shutters are required, and visitors are few and far between in times of frost and snow. Perhaps, on an average, 75° Fahrenheit may be a fair register during the day; slightly elevated before feeding, and allowed to fall to 65° or thereabouts at night. A uniformly high temperature is an evil usually overlooked, and will be mentioned in connection with the topic of hibernation. Great attention should be paid to the mechanism for regulating the heat, that it is always in perfect working order, so that the temperature may be controlled to a degree. If the floor be too hot or too cold, the snakes—although tolerant within fairly wide limits—are prone to vomit, and acquire an irritable condition of stomach; while they may be (and often are) either chilled or scorched to death. A large number of little Nose-horned Vipers, which were born in this country a short time ago, were absolutely baked dry and crisp before they were discovered on the gravel where the parent Viper lay at ease! If rugs are put in at night, they should be removed in the daytime; a better plan, when there is any trouble in keeping up the warmth, is to cover the ventilators and glass with blankets during the night; but if this be not sufficient, the snakes themselves may be covered up.

A small cage for snakes from one to three or four feet in length requiring artificial heat, adapted to stand in any room, may be constructed conveniently on the plan of those which contain moths and tarantulas in the Insectarium in the Regent's Park, with the addition of a reservoir for hot water underneath. Its size must depend, as in the last case, on that of the reptiles it is intended to accommodate, and on the taste of the proprietor. The same rules may be laid down—that it cannot be too large,

that its dimensions must not be less in proportion to the largest occupant than those stated before, and that a similar restriction with regard to the number of inmates is to be observed; but there is a further consideration to be taken into account in the fact that a large cage will require a larger supply of boiling water at one time, but will require to be replenished less frequently than a small one—a point of no small importance sometimes in the domestic economy of a household. Having mentioned this, to obviate the idea that I am recommending any fixed measurements for adoption, and premising that any detail is subject, to meet the exigencies or expediciencies of the situation, to the same variation as the size of the whole, I may perhaps describe one now before me as a type:—Length, 3 feet 6 inches; breadth, 2 feet 8 inches; height of actual interior, from gravel to cover, 2 feet 4 inches. This case is constructed entirely of glass and metal. The two ends consist of single panes, but the front and back, or long sides, are divided each into two panes, as the glass is ordinary thin window material; single sheets of plate glass might be used. The edges or framework, being of metal, are mere narrow bindings, but are at the same time as strong as stout wooden pillars would be; one end is removeable, sliding upwards in two vertical grooves, for convenience in cleaning the floor of the cage. Each of these four glass sides is bound with a thin ribbon of zinc along its upper margin. The top is composed of a sheet of perforated zinc, fitted upon a quadrangular frame; this is hinged at the back with six attachments (the two long sides are precisely alike, but, for perspicacity of description, I style the one nearer to me and to the centre of the room the front, and the other, against the window, the back), but is so contrived that the frame—about three-quarters of an inch in depth—laps or *jits down over* the front and ends, when the cover is closed, like the lid of a tin biscuit-box. It is secured with a staple and split-ring in front (of which arrangement more anon). The object of this overlapping ledge and the number of hinges at the back is to prevent the snakes from pushing up the soft flexible perforated zinc at any point, and scratching themselves in endeavouring to get through. The sliding end is locked immoveably by the cover, and would, indeed, under any circumstances, keep in position by its own weight.

Looking at the cage as it stands, one might imagine the glass sides to spring directly from the floor, since the lower edge of the panes is exactly on a level with the gravel. In reality, however, that stony carpet is an inch deep, so that the glass is inserted into a low wall of metal of that height, surrounding the floor. The latter is also made of perforated zinc, but the holes are much larger than those above—big enough to admit a dried pea. Underneath is a cistern for hot water, nine inches in depth, and capable of holding thirty-six gallons; but between the metal top of this cistern and the perforated floor of the cage is a space of about an inch and a half, in which lies a shallow tray or drawer, filled with baked earth or sand (the coarser the better) or charcoal, or all three mixed. This drains and purifies the cage, prevents the accumulation of moisture which would take place on a solid floor, and at the same time regulates economically the transmission of heat from below, by virtue of its mal-conductivity, even storing it to some extent for radiation afterwards. Whatever is used—sawdust, earth, or sand—must be quite dry, or it will exhale steam—and should be coarse or crumbled rather than in fine powder. The tray—mine is divided into two—is pulled out in front by a couple of little knobs, like a drawer; once a week is quite often enough to change its contents.

It has been suggested to me that it would be convenient to have the cage and cistern made separately, and stand the one upon the other. I hardly see the advantage myself. It would involve another layer of material between the snakes and the hot water, already separated by gravel, perforated zinc, earth, and two sheets of imperforate metal. Its weight adds very little to the upper part when it is empty; and as the burden of support comes entirely upon the perpendicular metal, there is not the least danger of any part cracking or bulging. The improvements claimed for such a construction,—that the cage is more easily moved, and that the cistern can be sent away to be filled instead of necessitating buckets and kettles to be brought into the room when it is replenished *in situ*,—appear to me to be very doubtful ones. In the first place, such a cage is not intended to be shifted here and there continually, like a parrot's; and to be obliged to lift it off on to a table or the floor every time the water is changed will be troublesome enough, to say nothing of the chance

of breakage. In the second place, to carry away the reservoir full of cold water would be no light job, and to bring it back filled with boiling would be still less easy. I should, therefore, certainly advise my readers who may contemplate setting up an article of this sort to have it connected in the manner I have described, with the cistern, tray, and cage in one and the same construction.

The cost of such a *v*varium, without the stand, is about £4 15s. The one I am speaking of rests upon a strong iron frame; and great attention must always be paid to the strength and steadiness of the support, whatever its nature may be, as the weight of water makes the burden very heavy, and the disastrous consequences of any accident are too obvious to require comment. The height of the stand will depend upon the depth of the reservoir; about three feet above the ground is a desirable level for the visible floor of any cage, with a view to comfortable observation of the inmates. The top of the stand had better be solid, like a table, to afford level support to the superincumbent water-apparatus; a piece of thin wood will be sufficient, but the bottom of the reservoir ought to be made of extra thickness, or strengthened with battens outside if resting on a skeleton frame. And below this I keep a humble piece of furniture, which I would strongly recommend as an adjunct to a cage like this to all snake-keepers of normal proportions—a broad, firm stool whereon to stand when doing anything to the interior. Everything should be worked from the open top, and thus elevated, the hand can reach any part with ease. Never use the sliding end, except for the purpose of removing the gravel, and cleaning the floor when the cage is empty; and then lift it out altogether and lay it aside. Sliding *doors* are an abomination; they catch the snakes' heads and tails, get blocked with gravel and refuse to close (which, in this case, would prevent the cover from shutting down also), stick half open at critical moments, and inevitably come to smash sooner or later. As for those finger-amputating, snake-dividing panes of glass with naked edges, which are often used in this connection, the less said or seen of them the better.

The hot-water supply is, of course, the most important question. The receptacle has an aperture of outlet, controlled by a tap, at the lower angle of one side, and a short wide pipe,

bent upwards at a right angle and closed by a screw, at the uppermost border of the opposite end. Over the former a piece of india-rubber tubing is fixed when it is to be emptied, to prevent splashing; while a funnel can be inserted into the other to facilitate the process of filling. And since this operation involves no inconsiderable amount of trouble, it is extremely desirable that the heat should be economised and expended entirely in the right direction, *viz.*, to warm the cage as far as possible. We must endeavour, therefore, to absolutely prevent its evaporation from any surface except the upper by encasing the other five sides of the reservoir in thick non-conductive material. The one of which I write is "packed" in a complete envelope of felt an inch thick, which is adherent to the metal through the medium of a glue-like cement; holes are cut for the two pipes, which are the only exposed points, and caps are made to fit over even these. Underneath, on the top of the stand, an extra bed of felt is laid, and the sides are covered with green cloth for neatness of appearance. It is extraordinary to note how very long this preserves the caloric, considering how lightly the upper surface is defended from radiation; but I may remark here that a depth of nine inches is hardly sufficient for a floor of this extent. It would save time and trouble to allow a foot, for, though the capacity of the tank would be thereby greatly increased, it would require filling much less frequently. The intervals at which the water should be renewed will, of course, depend upon the situation of the apparatus, and the partial or complete covering of the glass and top; and on the capacity of the cistern, out of all proportion to its relative size. Six gallons of water will retain heat ten times as long as two, under similar conditions. The owner must be guided by the indications of his thermometer; such a cage as I refer to requires to be replenished every three days with full exposure in the ordinary temperature of a living-room, but with the cover on would keep warm a week. It should always be quite full, and the water should be as near the boiling-point as possible when it is poured in; a very gradual diminution of the heat may be insured by withdrawing a quantity—say a large kettleful—morning and evening, and *at once* replacing it with boiling. Every particle of heat must be hoarded, and, as undue waste can be prevented with attention to these few details, which are simple enough after once being

reduced to working order, they should never be neglected. The tray of earth will be found to equalise the temperature wonderfully, preventing too sudden an accession when the reservoir is filled, and retarding its decrease afterwards; if it falls very low, a blanket may be spread over the snakes as they lie upon the gravel, but, as we have seen before and shall see again, it is not altogether undesirable that the heat shall be lessened at times.

(To be continued.)

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By JOHN T. CARRINGTON, F.L.S., AND EDWARD LOVETT.

(Continued from vol. vi., p. 391.)

Pagurus ferrugineus, Norman.

This small crab appears to partake of the features of *P. Hyndmanni* and *P. lævis*, for its large claw is reddish in colour, slightly hairy above, but smooth beneath; its remaining legs are banded red and white. It has been recorded from Shetland, Northumberland, the Clyde, and Guernsey; and we have obtained it from the last-named locality.

Pagurus Forbesii, Bell.

This species was described from a single specimen sent to Prof. Bell by Mr. Corks, of Falmouth. The carapace is smooth; antennæ longer than the first pair of legs; eye-stalks club-shaped, and as long as the first joint of the inner antennæ. Anterior feet on the unequal wrist and hand roughly granulate, the second and third pairs slightly compressed and with numerous small reddish brown spots.

This species, we observe, has been recorded from Galway (rare), and off the South Isle of Arran, in sixty fathoms.

Pagurus Dilwynnii, Bate.

The striking peculiarity of this crab is that its left claw, and not its right, is the larger. The colour is of a bluish brown in life, which, however, is lost after death. The second and third joints of the anterior legs are toothed and armed with a medial

ridge. The antennæ are hairy, and are not quite so long as the prolegs. The swimmerets are hairy and bifurcate.

Mr. Spence Bate describes this species from numerous specimens taken in a shrimp-net at Teignmouth, and it has been since dredged off Plymouth; we have also procured it from the same coast in seven fathoms.

Pagurus eblaniensis (Kinahan).

In the 'Natural History Review,' 1857 (p. 84), Dr. Kinahan describes this species, which he, however, thinks may be a form of the young of *P. Bamhardus*, and again at p. 161 of the same volume, at the suggestion of Mr. Francis Day, he surmises it may be the true *P. ulidianus*.

Fam. PORCELLANIDÆ.

This family terminates the British *Anomoura*, and embraces only the genus *Porcellana*.

Porcellana platycheles, Lam.

This crab is of small size, the carapace being seldom over half an inch in length, its breadth being somewhat less. The anterior portion is developed into three blunt prominences, and the rest of the margin is comparatively smooth. The antennæ are about twice as long as the carapace. The anterior pair of legs are large and very broad; they are slightly hairy on their flattened surface, and ciliated on their outer margin with a thick fringe of hair. The next three pairs of legs are armed with a hooked terminal joint, also fringed with hair, and the last pair of legs are simply rudimentary, usually lying on the posterior portion of the carapace.

The colour of this interesting species is usually of a brownish tint, much lighter beneath, but this shade is much regulated by the locality it inhabits. In the young state, especially, it is extremely difficult to discover unless it moves, for it adheres so closely to the rough stones which it affects, and moreover resembles them so completely in colour, that the most experienced eye will often overlook it. Under these circumstances it is not to be wondered at that we find it widely distributed. Prof. Bell states that it had been sent to him from various parts of the coast from the Orkneys to Land's End. We have ourselves collected

it abundantly from the Channel Islands, Devon, Dorset and Cornwall coasts, as well as from the Farne Islands. It has also been recorded from several parts of the Irish coast, as well as from the French coast and the Mediterranean. It seems, however, from what we have gathered, that its development is more favoured in a northern than in a southern locality, specimens from the north being generally larger and finer than those from the Mediterranean; this rather curious fact obtains with some other species.

Being a shore crab it is easily obtained at low tide by searching carefully the under surfaces of large rugged stones. In the young state, final stage, this is a beautiful and instructive object for the microscope, the remarkable setæ covering the animal exhibiting most curious structure.

Porcellana longicornis, Edw.

This species, though resembling the last-named in general form, is so distinct in its specific features that a description is necessary.

The carapace is nearly round in form, and the three anterior projections are very small, the middle one being slightly grooved; the antennæ are very long, whence the specific name of the animal. The anterior pair of legs are large and heavy, in comparison to the size of the owner, the carapace seldom reaching three-eighths of an inch in diameter; they are ribbed longitudinally and armed with powerful forceps; they are also unequal in size, which is not the case with *P. platycheles*. The next three pairs of legs are simple and hooked at the tips, and the last pair are rudimentary.

P. longicornis is not hairy, like the former species; it also differs widely from it in colour, being generally of a dull reddish tint, but often of a bright red, beautifully marked with brown or white, some that we obtained from the outer Farne Islands having a most brilliant combination of tints. It seems to be often taken in company with the last species, though it is more frequently found in rather deeper water; its range, however, appears to be pretty much the same as that of *P. platycheles*.

In Jersey we were much struck on observing that, whilst *P. platycheles* was invariably found on rugged, overgrown, or

encrusted rocks, *P. longicornis* was just as invariably found on smoother rocks, generally boulders of pinkish syenite, on which it was well protected by its similarity in colour.

Suborder MACROURA.

Galathea squamifera, Leach.

We now approach the Lobster type of Crustacea, although this genus, from its remarkable characteristics, is included in the *Anomoura* by Prof. Bell.

The carapace and abdomen vary much in size; but Bell states that specimens have been obtained three inches in length, the usual size, however, is below this.

The carapace is flattened, ribbed laterally, and armed on either side with spines pointed forwards, terminating in three long spines forming the rostrum; the abdomen is formed of wide segments, terminating in a broad telson, fringed with setæ. The anterior pair of legs are long, equal, and partly spinous, the flat surface however, being covered with scale-like processes, from which it obtains its name. The next three pairs are scaly and hairy, armed with hooked claws at the extremities; the fifth pair are rudimentary, and appear to be used as brushes or cleaners.

The colour of this species is generally of a dull brown, but Bell states that he obtained some from Bognor of a reddish tinge.

It is a common frequenter of lobster-pots, Bognor being mentioned (and found by us) to be a good locality for it. Large numbers were thrown up on the Sussex coast by the great storm of January 18th, 1881. It has also been recorded from Cornwall, Devonshire, Dorsetshire, and all parts of the coast of Ireland.

It is not a deep-water species, being often found at low tide, and we have dredged it at three fathoms.

Galathea strigosa, Fabr.

Although this species much resembles the former, it would perhaps be as well to describe it generally, instead of referring only to those points wherein it differs from *G. squamifera*. It often attains a length of four inches, and its first pair of legs being about the same length as the carapace and abdominal somites, cause it to appear larger even than this.

Its carapace is strongly segmented laterally, the upper margins of each fold being fringed with setæ, and, towards the rostrum, with spines also; the lateral margins are also strongly spinous, the spines pointing forwards in the same direction as the rostrum, which latter is formed of three stout and sharp points. The antennæ are fine, long, and have the basal joint spinous. Eyes kidney-shaped. The anterior pair of legs equal and proportionate, densely covered with spines and setæ, the forceps being beautifully fringed with the latter; the next three pairs also spiny and terminating with a powerful claw; last pair rudimentary.

The colour of this handsome species is usually a warm reddish brown, with decided markings of a bright blue, which, however, should be seen in life to be fully appreciated.

Prof. Bell's graphic description of the rapid backward jerking (for it can scarcely be termed swimming) of this species we can fully endorse, from observations both in a state of nature and in captivity, and it is certainly remarkable to find an animal with anterior eyes of such development whose movements are of such a retrograde character, so to speak, as those of *Galathea strigosa*. Of course, when safely landed in its burrow, or crevice, its eyes are of great service in watching its prey or its enemies; but as to its general movements in the water, they are decidedly in a direction where these organs of vision would be of but little service.

The ova of this species are small, of a golden colour, and connected in groups, of great beauty when examined by the microscope. As regards the zœa, we may refer our readers to the woodcut in Bell's work; the filamentous tail is very similar to that of the zœa of *Lithodes maia*, another crustacean of the division *Anomoura*.

G. strigosa is a fairly distributed species, inclining to southern waters; it is common on our south-west shores and in the Channel Islands, though it is found also in our northern seas. At Weymouth it is called the "Spanish Lobster," possibly on account of its bright colours.

(To be continued.)

NOTES AND QUERIES.

Animal Migrations through the Suez Canal.—We learn from ‘Nature’ that Professor Keller, of Zurich, during a stay near the Suez Canal, has been making a study of the animal migrations due to the opening of this means of communication. These are said to be very positive, though certain causes stop the progress of some species, or at least retard their movements,—for instance, the too sandy nature of the ground; the large lakes; the currents; the passage of ships, which derange the ova and larvæ; and the too great saltiness of the canal water. Since 1870 the following have passed from the Mediterranean to Suez:—*Solen vulgaris*, *Umbrina cirrhosa*, *Labrax lupus*, *Balanus miser*, and *Ascidia intestinalis*. Some Mediterranean species are now on their way through (*Solea vagina*, *Cardium edule*, *Sphæroma*), several fishes (*Pristipona stridens*, *Crenidens forskali*, &c.), and some molluscs (*Cerithium scabridum*, *Mactra olorina*, *Mytilus variabilis*) have passed from the Red Sea to the Mediterranean, while a numerous “caravan” was found resting in the basins of the great Bitter Lakes. The fauna of the canal is still too poor for large carnivorous species to find a living in it; hence Rays, Cuttlefishes, &c., do not migrate: nor have Red Sea Corals passed into the canal.

Wild Animals in India.—The ‘Gazette of India’ contains the returns for 1881 of wild animals and poisonous Snakes killed in British India during the year. The total number of wild animals killed during the year was 15,279; Snakes, 254,968. The total number of persons killed was 21,427, against 21,990 in 1880, and the mortality was far greater in Bengal, the North-West Provinces and Oudh than in other provinces. Of the total number of deaths, 18,610 resulted from Snake-bite, and 2817 were caused by wild animals. The total number of cattle killed decreased from 8536 to 2032. The number of Tigers, Leopards, Bears, and Wolves destroyed was 1557, 3397, 991, and 4538 respectively, as compared with 1689, 3047, 1100, and 4243 in the preceding year; and the number of human beings killed by these animals respectively amounted to 889, 239, 75, and 256, against 872, 261, 108, and 347 in the year 1880. The total amount of rewards paid during the year was Rs. 102,811. Of this sum Rs. 90,850 was awarded for the destruction of wild animals, the remainder (Rs. 11,961) being paid for the destruction of Snakes. Of the latter amount, Rs. 6,214 was paid in the Bombay Presidency. In ‘Nature’ for December 28th last will be found an interesting article by Sir Joseph Fayrer “On the destruction of life by poisonous Snakes in India.” After quoting and commenting in greater detail upon the official returns above referred to, he expresses the opinion that still more zeal might be exerted in exterminating poisonous Snakes in

India, and that the mortality caused by them can only be checked by a system of organized and sustained efforts for the destruction of certain species. He advocates the employment in every district of an organized body of men to seek out and destroy the poisonous species, receiving a reward proportionate to the deadly character and number of those killed, and suggests that magistrates, district and police officers, and civil surgeons be authorized to give the following rewards, namely :—for a *Cobra*, 8 annas ; *Bungarus cæruleus*, 6 ; *B. fasciatus*, 4 ; *Ophiophagus*, 8 ; Russell's Viper, 8 ; *Echis*, 4 ; and *Trimèresurus*, 2.

The Fauna of a Welsh Village Church.—Our pretty little church, before it was restored a few years since, was in a very dilapidated state. Rabbits had their burrows in the old walls, and the rotten ivy-covered roof was tenanted by Slowworms, which occasionally fell on the heads of the congregation to their great alarm. At the present time numbers of Bats come into the church from an adjoining wood, and make an untidy mess on the floor and seats with the *débris* of their insect-food. One Sunday morning the sexton was told that it would be a good thing if they could be dispersed, and, on returning to the church for the afternoon service, the villagers were amazed to find a large paper tray, upon an old altar-tomb in the churchyard, on which were arranged in rows the bodies of some thirty Long-eared Bats, the spoils of a successful raid after the morning service. Sometimes the preacher, in the midst of his discourse, may hear the Brown Owls hooting from an old tree in the churchyard close at hand.—MURRAY A. MATHEW (Stone Hall, Wolfscastle, Pembrokeshire).

English Deer Parks.—Apropos of a paragraph which has been going the round, relative to the immunity of Deer-parks from taxation, it may be interesting to show that there are many more such parks in England than is generally supposed. There are no less than 334 Deer-parks south of the Tweed, thirty-one of which contain Red-deer. Eridge Park, Sussex, is the oldest ; the largest is at the Cheshire seat of Lord Egerton, of Tatton. The extent of this park is 2500 acres. Blenheim is sometimes said to be the largest ; but this is an error. It is true that Blenheim Park measures 2800 acres, but only 1150 acres are occupied by Deer. Near London the largest and most famous Deer-parks are those of Richmond and Eastwell ; in the Midlands is Thoresby ; in the North, Knowsley ; and in East Anglia, Grimsthorpe.—‘*Land.*’

[This information is apparently derived from Shirley's ‘English Deer Parks,’ published in 1867, and must be considered to be only approximately correct ; for in some counties there are more Deer-parks than Mr. Shirley seemed to be aware. In Hertfordshire, for example, there are ten, although he only enumerates six.—ED.]

MAMMALIA.

Singular conduct of a Hare.—On the 2nd September last my brother and I were shooting in North Cornwall, and were trying a large uncultivated close, of between twenty and thirty acres in size, in search of some birds which we had just before flushed. I was at a distance of some 200 or 250 yards from my brother, when he kicked out a Hare, and let it go away apparently unhurt. The Hare made for the only gateway, which was some 100 yards from me, and the whole length of the close from the Hare, but in a different direction. I ran towards the gate and got within fifty yards of the Hare when it was nearing the gateway. I shot at it, but without effect, and the Hare ran nearly to the gateway, then turning sharp round faced me, and came right back, making for the hedge behind me, where, however, I could see no place for it to break. As it passed me I fired my second barrel and killed it. My brother and I were both at a loss to know what had caused the Hare to turn and face the gun instead of getting away through the gateway, which was entirely open in every way. When we passed through the gateway, and had gone but ten or twelve yards, my brother put his foot almost on another Hare, and when she went away killed her. He then found that his foot was resting on three leverets not bigger than rats, and it was evident that the former Hare, being the jack, had shirked the gateway so as not to run over the doe in her form. We had dogs with us, but they did not chase, although probably the Hare might have expected they would. I may add that, so far as we could see, there was no other means of exit from the first close but the gateway, it being surrounded, except in that one place, with an unusually high fence and ditch on either side.—THOMAS WOLFERSTAN (29, Woolster Street, Plymouth).

Fatal Collision between two Hares.—During a day's shooting on my uncle's land at Boynton Hall, near Chelmsford, about the middle of December, a Hare came by its death in a most extraordinary manner. Two Hares were put up together from a field. Both ran back and tried to pass the beaters, but, on being shouted at, became apparently confused, and ran straight at one another without looking. The result was a collision, after which one Hare fell over, and its neck was found to be broken. The occurrence was witnessed by my uncle's keeper and several of the beaters, but I believe none of the guns saw it. I have heard of a case in which a coursed Hare killed itself by running against a clod of earth, but never before have I heard of such an instance as the foregoing.—ROBT. MILLER CHRISTY (Saffron Walden).

Former occurrence of the Marten in Norfolk.—I do not know whether you will think it worthy of addition to the notices of Marten-cats

in Norfolk, that I have recently learnt that one was seen throughout the summer at Gissing, in this county, about forty years ago. I have carefully cross-examined my informant, and have no doubt that it was accurately identified, though not obtained.—H. T. FRERE (Burston Rectory, Diss).

Mole pursuing an Earthworm above ground.—One day, whilst sauntering down a lane with steep-inclined banks covered with long matted grass, I suddenly heard a rustle on the bank, and, stopping a moment, watched for a mouse or rat to appear, but to my surprise out came a very large earthworm (*Lumbricus*), wriggling along at a rapid pace, being evidently pursued by some enemy. Before the worm had got clear of the grass, his pursuer, a Mole, poked his head through, and, seizing the worm, bit it in half. He then dragged one piece back, but whether he ate it or simply secured it in some way I cannot say, as the period of his disappearance was so short, and almost immediately he pushed his head through the grass again, and began smelling about for the rest of his prey, which was wriggling in front of him. He soon discovered it, and, seizing hold of it, carried it back. During all this excitement the Mole only showed his snout and head through the grass. Evidently the Mole had been chasing the worm underground, when the latter, coming to the surface, endeavoured, though unsuccessfully, to make its escape.—FREDERICK LONG (Wells, Norfolk).

The Grey Seal in Norfolk.—On November 30th I saw a young female Seal at Yarmouth, which had been killed two days previously on Breydon : as it was undergoing the process of skinning at the time of my visit to Lowne, the birdstuffer, my opportunity for examining it was not very favourable ; but Mr. W. W. Spelman, for whom Lowne is preserving it, very kindly allowed me to take away the head, and a subsequent comparison of the skull with a number of specimens in the Museum of the Royal College of Surgeons, under the guidance of Professor Flower, leaves no doubt as to species (*Halichærus grypus*). It will be remembered that an adult female Grey Seal and its little one, killed in December, 1881 (Zool. 1882, p. 187), were the first recorded specimens of this species on the Norfolk coast. The present example measured 4 ft. 3 in. in length from the nose to the end of the hind flipper, and weighed 58 lbs. Mr. Spelman has presented the skull to the Norwich Museum.—T. SOUTHWELL (Norwich).

BIRDS.

The Migration of the Common Jay.—Lord Lilford remarks (p. 27), on the unusual number of Jays which appeared in his woods in Northamptonshire early in October. This is very interesting, as their sudden abundance correlates with the great flight past Heligoland on the 6th, 7th, and 8th of the same month. I have recently also received several communications regarding the large and very unusual gatherings of Jays observed in the

large woodlands in the western half of North Lincolnshire. It appears, therefore, very probable that our local birds were last autumn largely reinforced by immigrants from the Continent. — JOHN CORDEAUX (Great Cotes, Ulceby).

Migration of the Jay.—I am glad to be able to add my mite of observation to Mr. Cordeaux's interesting article on this subject. After reading his remarks, I have no doubt that this immediate neighbourhood was affected by the migration in question, though not to the extent of a visit from the main body of migrants. About the 11th or 12th of October, having occasion to pass through some fir woods in this immediate locality, I was surprised at the immense number of jays which were to be seen and heard on every hand, and all appeared in a more or less excited state. I do not mean to say that the Jay is at any time at all rare either near here or in the New Forest, but it is well known to be much scarcer generally than it was some years ago, and this is not to be wondered at when a price is put upon its head. So common were they about the middle of October, that even the most casual observer could not but notice them, and several gamekeepers called my attention to it, one of them telling me that he counted thirteen jays in a single tree, and another telling me he had never seen them so commonly before. The numbers that were caught or killed, by other people besides gamekeepers, during October is also a further proof that they were unusually abundant, and I am quite sure that not half of those I saw were bred in this neighbourhood. The Jay, unlike its gregarious relations, seems to me naturally unsocial, and, like the Magpie, if two or three are together they are generally chasing or fighting each other. Yet there are exceptions even to this rule, but when a certain degree of amity exists between individuals I imagine they are a family party, and members of the same brood, which could not have been the case with the numbers seen congregated together in October last. By the end of the month the numbers to be seen were considerably reduced. These observations were made principally in the fir woods on the western side of the river Avon, but whether the number of jays was increased to any extent in the New Forest I am not in a position to say. A case in point, as to the direction of the flight of migrating birds, may be noticed in the migration of the Skylark, which, as far as I have observed, is never from north to south, but from north-east to south-west, or still more from east to west.—G. B. CORBIN (Ringwood, Hants).

"Elder," a Local Name for the Cormorant.—A few years since, when shore-shooting one cold wintry day at Southerness on the Stewartry coast, I had secured a Cormorant. Shortly after I was carrying the bird along by the legs, when meeting an old woman she exclaimed with an air of mock alarm, "Eh! Ye hae shot aue o' the six Elders!" I subsequently learned

that this is not an uncommon salutation with which to greet one who has bagged a Cormorant, but neither this woman, nor any other person acquainted with this curious remark that I have asked for an explanation, could give me any reason for it, or tell me how it originated. Throughout this county, as I formerly stated ('Zoologist,' 1878, p. 428), the Cormorant is known as the "Cow'en Elder," Cow'en being the provincial pronunciation of Colvend, a seaboard parish on the rocky coast of which these birds formerly nested commonly. In the adjoining county of Wigtown they are known as "Mochrum Elders"—Mochrum being an inland loch, on the banks of which they once bred in numbers, but from which they have lately been nearly, if not altogether, banished. Their territorial titles are easily understood, but why are such voracious, uncleanly creatures called after those decent, douce, peculiarly Scottish productions, the Pillars o' the Kirk? And why a killed Cormorant should be "ane o' the six Elders" is still more inexplicable. However, six Elders are a fair average number with which to constitute that ecclesiastical court, the Kirk Session, which in former times held undisputed sway in rural districts, imposing pains and penalties for breaches of morality, non-attendance at Kirk, Sabbath-breaking, and various other offences. Seaside dwellers familiar with the characteristics of the Cormorants may, by way of revenge for some infliction of the "cutty-stool," have thought it a good return to call a Cormorant an Elder! I shall be pleased if any of your readers can throw light on the subject.—ROBERT SERVICE (Maxwelltown, Kirkcudbrightshire).

Black Redstart in the North of Ireland.—As the capture of a female Black Redstart here on the 30th of last October, which I reported to you a few days later, is an uncommon event in this northern part of Ireland, I think you may perhaps consider it deserving of a notice in 'The Zoologist.' It is the first time that I have known or heard of a Black Redstart in the North of Ireland since the publication of Thompson's 'Irish Birds.' The facts are as follows:—On October 30th, 1882, a female Black Redstart, which had been catching flies on the window-sills, flew in at an open window into one of the rooms, when I caught it, and, having compared it with a stuffed specimen to verify the species with accuracy, let it go again unhurt. It flew off, and has not been since seen, although probably it is wintering in this country,—CLERMONT (Ravensdale Park, Newry).

Dipper singing during severe frost.—On the coldest day during the severe spell of weather we had last December, I was by the river-side waiting for a shot at wild duck. The temperature was low enough for my beard to be covered with icicles from my frozen breath. Close to me, on a stone in the river, was a Water Ouzel warbling a soft Thrush-like song, and seeming to be extremely jolly. At the very same spot in the cold weather of January, 1881, I heard a Dipper singing from a large lump of ice in

mid-stream, when there must have been fully twenty degrees of frost. As a fly-fisher I have for many years wandered by the sides of mountain and moorland streams, favourite haunts of the Dipper, during the spring and summer, and yet, strange to say, I only remember once to have heard its song at a season which would seem more appropriate to it.—MURRAY A. MATHEW (Stonehall, Wolfscastle, Pembrokeshire).

The Red-legged Partridge in North Norfolk.—It having been stated by some that the Red-legged, or as we call it the “French,” Partridge was very scarce this season, and knowing that a wet summer is always said to affect them more than the English Partridge, I have collected particulars of bags made between the 1st and 20th of October, near Cromer, which give a proportion of about eleven English birds to every Red-leg. But very much depends on locality; thus of forty-one killed at Trimmingham ten were Red-legs, but this was always a favourite place for them, while forty-four killed at Northrepps, adjoining, were English to a bird. There is no doubt that, under the modern system of “driving,” they suffer more than they used to do when the plan was to walk the turnips, and the wary Red-legs might be seen topping the hedges far out of shot. Last year I knew of an instance at Plumstead, near Norwich, in which sixty-four Red-legs were killed out of 110 Partridges, but this was very exceptional, and mostly on rough ground, which they like. That the dislike formerly shown to Red-legs is decreasing is certain, and no sportsman who cares about “driving,” at which they afford the finest sport, ever thinks of destroying their eggs. Mr. Stevenson, in his article on the Red-legged Partridge as a Norfolk bird (*‘Birds of Norfolk,’* vol. i., p. 411), mentions their habit of perching on trees, but in this respect they have now adopted the habits of their English cousins, and though I have shot at an old Red-leg as he flew out of a hedgerow oak-tree, the circumstance was so very exceptional as to be the only occasion on which I have seen one perching. It may also be partly owing to the yearly diminution of suitable hedgerow timber, and the fact that no young trees are planted since the plan of turning cattle into the fields became general, and the ash in particular, which must once have been a very favourite hedgerow-timber, is completely dying out in Norfolk, and so bad is it for the land that none are planted, though it fetches a price equal to the best oak.—J. H. GURNEY, JUN. (Northrepps, Norwich).

Variety of Wheatear and other Birds.—When staying at Scarborough I went to Filey, and at Brown’s, the taxidermist, I obtained a pretty variety of the Wheatear. Its back, shoulders, neck, and top of head were white, here and there speckled with minute grey spots. It was a bird of the year. At Scarborough also I obtained a cream-coloured Hedge-sparrow, pied Lark, and a Ringed Plover with the back a pale drab colour.

A few weeks ago a keeper near here found a nest of young Jays, one of which was white, with slightly yellow markings on the wings, the other three birds being of the ordinary colour.—J. WHITAKER (Rainworth, Notts).

Partridge perching.—About the middle of last June I was passing below a large, old, low oak-tree that had once been pollarded, but now bears branches again, when I was startled by what I took to be a Stock Dove coming out of it; but I saw directly after that it was a Partridge, and I believe a Red-legged or French one. Knowing that this bird not unfrequently breeds on the top of straw-stacks, I made search for a nest, but did not find one. The tree stands in a hedgerow near here, and Owls have bred in it.—R. M. CHRISTY (Chigual St. James, near Chelmsford).

Snowy Owl in Donegal.—Mr. W. H. James, the principal light-keeper on the Island of Inishtrahall, at the northern extremity of the county of Donegal, has sent to this museum a Snowy Owl in immature plumage, which he informs me was shot by himself at Inishtrahall on the 19th of November last. It was first observed about six o'clock in the morning, the wind being then north-west, squally, with hail showers.—A. G. MORE (Curator of the Natural History Museum, Leinster House, Dublin).

The Blue-tailed Bee-eater.—The example of this bird mentioned on p. 33 has at length been traced, and it was exhibited at the scientific meeting of the Zoological Society on January 16th by Mr. H. E. Dresser. Since it proves to be an adult specimen, the mystery of the appearance of this Asiatic species so far west remains as great as ever. Is it possible that it was "changed at nurse?"—HENRY T. WHARTON (39, St. George's Road, Kilburn, N.W.)

Greenland Falcon in Sussex.—I have taken advantage of a visit to Brighton to call on Mr. Swaysland, to whom I am indebted for an inspection of the Greenland Falcon recorded in the last number of 'The Zoologist' (p. 34). I found it to be a fine adult *Hierofalco candicans* (Gmel.), of a medium character as regards the extent of its dark markings, but I think inclining to the light rather than to the darker phase of this very variable species. This bird, when shot on the 26th September, had just completed its moult, except as to the quill-feathers of the wings and tail; in the latter only two new feathers had yet appeared, both lateral and one on either side. Each of these new feathers is an immaculate white, which is noteworthy, as the older rectrices show traces of dark transverse bars, which, however, are but very slight and rudimentary, except upon the central pair. Mr. Swaysland informed me that the Falcon (probably the same individual) which his son saw at Rousden in June had been observed about that locality for some two months previously, and therefore it had probably not nested.—J. H. GURNEY (Northrepps Hall, Norwich).

Late Stay of the Swift.—Chiffchaff in Winter.—In my notice of the late stay of the Swift during the past autumn (p. 30) November 3rd is stated to be the latest date on which I saw this bird last autumn. I find, however, on referring to my notes that the date should have been November 10th. It may be interesting to note that when out shooting near Brecon on December 21st last I noticed a Chiffchaff or Willow Wren flitting along a hedge. To be certain about the species, I shot it, when it proved to be the former.—C. YOUNG (Llandaff).

The Note of the Manx Shearwater.—Lambay Island, off the coast of Dublin, has long been known as a breeding place for this species, though I am not aware that the eggs have ever been brought thence. Watters was informed on Lambay in 1851 that these petrels only visit this island and breed in some years, and not in others. The single white egg found in burrows above the rocks was correctly described, and the bird had decreased in numbers from about fifty, twelve years previously, to a dozen the year before his visit. Prior to this Mr. Montgomery obtained a couple of Shearwaters in a hole in the island, one of which came under Mr. Thompson's notice; but neither Watters nor Thompson appears to have had personal experience of the bird or its nest on the island. I have always seen a few in the neighbourhood of the island during the breeding season, though never more than about three pairs. Once only, in May, 1882, I believe I started the bird from the land. In July, 1880, during a week spent on board a trawler between Dublin and Carlingford, Shearwaters were continually seen, usually in the afternoon and evening, and in little parties of two or three to about a dozen. A more graceful flight can scarcely be observed. As the season grows later the flocks grow larger, and towards night also they seem to gather together. In broad daylight they keep farther to sea, but towards dusk and during the night they fly about the coast. They feed chiefly at night, and probably keep their nesting-holes by day, and thus elude observation. This brings me to a question which I raised in 'The Zoologist' in June, 1880, and enables me to correct a false supposition there made. The cry which I for a time believed to belong to a species of Owl proves to be the utterance of the Manx Shearwater. Such a strange, hoarse, weird, half-strangled noise as they make, and heard on land as I heard it, would instinctively be attributed to the throat of an Owl. To Irish folks, who have no "hooting Owl," it is some satisfaction to have discovered so good a substitute. About eight or nine years ago a lad on Lambay Island brought home a couple of young birds, the like of which he had not seen before, though in the habit of rearing sea-fowl of all kinds. He took them from holes on the north side of the island one evening, and all through the night there came unearthly noises, which terrified the good woman his mother so much that she ordered them to be removed at daybreak as "uncanny." I have no doubt

these were young Shearwaters. This was told me last May, when my friend Mr. Barrington came with me to Lambay. Up to that time I had not identified the noise, but my supposition that it proceeded from an Owl had been shaken by my Howth friends asserting that they had seen as well as heard the bird flying over the water in the afternoon, and that it was evidently a sea-fowl. Mr. Barrington was so much interested that he went out that night, and was lucky enough to hear it. Connecting this habitat with that of Howth, I began again to suspect the Shearwater, which I had hitherto set down as a silent bird, in consequence of finding no allusion to its note in the books; and on the 1st July last I was fortunate enough to see and hear a flock of about thirty birds crowing and hooting in concert. Mr. Barrington has described the sound (p. 29) in the syllables "kuck-kuck koo," which, often much prolonged, and repeated quickly five or six times at intervals, is as close as it can be rendered in words. The birds seldom make this noise by day, but on heavy still afternoons in May, June, and July they are not unfrequently to be heard on the south side of Howth. They may then be seen far out to sea, swerving in occasionally, and coming nearer towards dusk. During the night, especially if it be dark, they hardly cease till dawn, flying over the cliffs and land bordering the sea. The sound must be well known to those who fish and boat by night, and to coastguards like McCarron, a correspondent of Mr. Barrington's, who takes much interest in birds, and who suggested the above words for the cry of the "night bird," as it is called in Kerry. Heard at night it is sufficiently gruesome to build any ghostly tales on, and may, perhaps, have favoured a superstition of a "night crow" or "night raven" in its time.—H. CHICHESTER HART (Dublin).

[It can hardly be said that naturalists have treated the Manx Shearwater as a *silent* bird. Yarrell, for instance, on the authority of D. W. Mitchell, remarks (vol. iii., p. 656):—"They make no noise when disturbed, though in their holes they are eloquent enough, the Scillonian synonyms of *Crew* and *Cockathodon* being derived from the guttural melodies they pour forth." Apparently the Orkney name for this bird, *Lyre*, in Shetland *Lyric*, noticed by Sibbald, Low, Montagu, and Saxby, has reference to the sounds which it utters. The Norwegian name also, *Skrabe*, looks as if it were onomatopœic. Sir R. Payne Gallwey, in his recently-published work, 'The Fowler in Ireland,' describes the note of this bird, which he heard on the Skelligs (p. 260), as resembling the syllables "Tóok-ä-höö, tóok-ä-höö."—ED.]

The Note of the Manx Shearwater.—Referring to my note on the cry of the Manx Shearwater (p. 28), let me draw attention to the statement on p. 260 of 'The Fowler in Ireland,' by Sir Ralph Payne Gallwey, which book has appeared since my note was written. The writer, describing the Skelligs and their sea-fowl, says:—"A few steps farther, and we hear

'Tóók-ă-hōō! Tóók-ă-hōō!' coming from under our very feet. Here is a hole, and we find inside the author of the peculiar cuckoo-like cry to be a Manx Shearwater." Edward McCarron, the keeper at the Tearaght Rock, described the sound as "kuck-kuck-ko, kuck-kuck-ko." The inference which I drew is now corroborated by evidence of the most direct character, and a cry has been traced to the Manx Shearwater—a bird hitherto supposed to be absolutely silent—for I could find no mention of a sound being uttered by this bird in any book I consulted when writing my previous note. In its hole the cry is probably subdued, but at night, when flying over the surface of the water, it is very loud and remarkable.—RICHARD M. BARRINGTON (Fassaroe, Bray).

[See the editorial note appended to Mr. Chichester Hart's communication on this subject.—ED.]

Rustic Bunting near London.—In the note under this heading (p. 33) it was inadvertently stated that only one previous occurrence of this Bunting in the British Islands (*viz.*, that taken near Brighton in October, 1867) had been reported. A second, however, was shot at Easington, in Holderness, in September, 1881, as recorded by Mr. W. Eagle Clarke ('Zoologist,' 1881, p. 465). The specimen recently reported by Lord Lilford, procured at Elstree Reservoir last November, is therefore the third which has been identified as an accidental visitant to Great Britain.

Shore Lark, Lapland, and Snow Buntings in Kent.—Having heard that a bird-catcher in this district had been catching some Shore Larks in November last, I went to his house to see them. He had then three, taken about two days before my visit, and these were supplemented by four more, seven in all, about a week later. Together with these, and associating with them, he had taken what he termed an "Ortolan," but which was indeed a Lapland Bunting in its winter dress, and this, as well as some of the Shore Larks, I obtained from him. Besides these birds, he had several freshly-caught Snow Buntings, in beautiful white plumage; and, over and beyond these, he produced a fourth bird, evidently only just got (I think he told me the previous day), which he believed to be a hybrid between a Greenfinch and a Common Linnet, *Linota cannabina*, and this conjecture, no doubt, is correct, as the bird bears in a very marked way the characteristics of each of these species. Thus in one visit I obtained from him the three good species, Shore Lark, Snow Bunting, and Lapland Bunting, with the above-mentioned hybrid. All these birds were perfectly clean in tail, primaries, and general plumage. All were shy, and evidently quite fresh caught.—W. OXENDEN HAMMOND (St. Alban's Court, near Wingham).

[Some years ago we remember to have seen a hybrid between the Greenfinch and Linnet, and we believe an example of this cross is in the collection of Mr. Frederick Bond.—ED.]

REPTILES.

Smooth Snake in Surrey.—No one could be better pleased than myself to hear that the range of *Coronella laevis* is extending. But the description given of the one seen by Mr. Ridley at Chobham Bridges does not tally with what I have observed around Bournemouth. From my experience it is (when first caught) wild and fierce. I had three last summer, which, when first introduced in the same case, were continually biting one another. Sometimes in their anger they would roll themselves together in a knot, biting fiercely, and whenever handled they would turn and bite, but after a week or so two of them became more amiable. One I had some time ago was of like temperament, and in two instances drew blood. I have kept many Grass Snakes (*Natrix torquata*), but have never known them to bite. The Sand Lizard (*Lacerta agilis*) occurs freely in this neighbourhood, and is, as a rule, very fierce. I should be inclined to think the Snake which Mr. Ridley saw was either a tame one set at liberty, or had been injured in some manner. I must express my admiration at that gentleman's conduct in refraining from taking such a rarity.—S. B. AXFORD (Bournemouth).

BATRACHIANS.

The Natterjack Toad in Suffolk.—‘The Zoologist’ for December last contains a note from Mr. Macpherson relating to the occurrence of the Natterjack at Aldeburgh. This is one of the few spots in Suffolk where this very locally-distributed species is to be found. A colony of them breed annually at a place called Coldfair Green, some three or four miles from Aldeburgh, the spot chosen being a sandy common, crossed by a small stream, which here becomes widened out, so as to form a sort of shallow pool, communicating with various other small ponds or creeks, and runs eventually into the mere at Thorpe, close to the town of Aldeburgh. In the month of April, during the spawning season, and more especially at night, their loud ringing cry may be heard at a considerable distance, the blending of their numerous voices forming one continuous murmur, not unlike that caused by distant flocks of sheep or of rooks, the effect of which is far from disagreeable. Their croak is totally distinct in character, both from the deep solemn bass of the Frog and the chirping treble of the common Toad. There are several cottages within less than a stone's throw of their breeding place. Natterjacks are also found, I believe, on the coast near Bawdsey, a few miles north of the mouth of the Deben, but I have no personal knowledge of their whereabouts at that place. I found them this year congregated at Coldfair Green in great numbers on the 22nd of April, and there were still a few in the water on the 4th of May. As regards their apparent partiality to the sea coast, the occurrence of this species in Scotland, in great abundance, on the shores of the Solway Frith, as mentioned by Bell in his ‘British Reptiles,’ and within a hundred yards of spring-tide high-water mark, might also be adduced as evidence.—G. T. ROPE (Blaxhall)

FISHES.

Large Pike in the Avon.—About the end of July last a large fish of this kind was caught in the Avon not far from Ringwood. It had been previously seen on several occasions, and many an unsuccessful attempt had been made to capture it by those versed in the "gentle craft." The fish, however, had apparently disappeared from its usual haunt for some considerable time, till one day a small boy, whose angling experience could not have been very extensive—much to his surprise—chanced to hook the ponderous-jawed monster, and brought it "to bank," with the assistance of a man who came to the rescue. I saw the fish soon after its capture, and it measured three feet ten inches in length, and weighed just over 25 lbs. Its appearance was somewhat lean and gaunt, which would, I suppose, account for the comparatively small weight of the creature. Judging from the formidable aspect of its open mouth, it must have been an old enemy to its finny companions, as some of its teeth, especially in the lower jaw, stood up nearly an inch in length. The man who landed it told me he distinctly saw a rat in its throat when first brought ashore. I understand that much heavier Pike have from time to time been met with here, but few exceeding it in length. I am well aware that larger and heavier Pike have been met with in other rivers, but I think perhaps the above may be worth recording. —G. B. CORBIN (Ringwood, Hants).

MOLLUSCA.

Food of the Oyster.—Can you give me any information about the food of Oysters? I have looked into several books for details on the subject, but have only encountered very general and vague remarks. It would appear that while the culture of Oysters has provoked considerable discussion, little or no attention has been directed to a discovery of the nature of their food.—R. A.

[The most recent contribution to our knowledge on this subject is contained in an article by M. Certes in the 'Bulletin de la Société Zoologique de France,' 1882, pp. 347-353, entitled *Note sur les Parasites et les Commensaux de l'Huitre*. In this article the writer observes:—"L'huitre est omnivore. Lorsque l'on examine au microscope les liquides extraits de l'estomac on y retrouve plus ou moins désagrégés par les sucs gastriques, des grains de pollen, des acariens, des débris d'algues et de crustacés, des diatomées, des foraminifères, des radiolaires, et en très grand abondance à certaines époques de l'année les œufs et les spermatozoïdes de l'animalcule lui-même."—ED.]

ARCHÆOLOGY.

Ancient Camps in Epping Forest.—There is a little confusion in the archæological note (p. 36) referring to the explorations at the Forest Camps and the Essex "Dene Holes," which it may be well to remove. The

British Association Committee (composed of members of our Club) is only concerned with the Forest Camps, and all the work, and almost all the money (excepting only the British Association grant of £10) has been supplied by the Essex Field Club. The explorations made last year at Grays, at the Dene-holes in Hangman's Wood, were entirely under the superintendence of the Club, and the proposed complete exploration researches will be also the work of the Essex Field Club.—WILLIAM COLE (Hon. Sec., Essex Field Club).

Ossiferous Cave near Cappagh, Co. Waterford.—The collections from the Bone Cave near Cappagh, mentioned in 'The Zoologist' for 1879, p. 331, and again in the current number (p. 37), have been deposited in the Science and Art Museum, Kildare Street, Dublin, where they occupy a separate case, and are arranged stratigraphically, the implements and other relics of man from each stratum being placed along with the animal remains discovered in the same deposit with them. One side of the case is wholly devoted to the second stratum, or grey earth, in which the broken marrow-bones and other smaller bones of the Irish Elk are associated with human bones, charcoal, and chipped hammer stones. A neighbouring case in the same museum is filled with the remains of Mammoth, Bear, Reindeer, Horse, and other pleistocene mammalia discovered from time to time in the Shandon Cave, five miles from here. The latter collection was arranged there by my much-lamented friend Prof. Leith Adams, whose influence and example led me to the discovery of the former and other caves that contain records of our past zoology, and by whom the animal remains were determined.—R. J. USSHER (Cappagh, co. Waterford).

The Royal Theriotionum near the Tower of London.—In reply to the enquiry under this head (p. 37), I may observe that a little information on the subject is given in Bennett's "Tower Menagerie" (Introduction, p. 15) which may be of service. It is as follows:—"In 1708 some improvement had taken place, for there were then, according to Strype, no fewer than eleven Lions, two Leopards or Tigers, three Eagles, two Owls, two Cats of the Mountain, and a Jackal. Maitland gives a much longer catalogue as existing there in 1754, and this is still further extended in a little pamphlet, entitled 'An Historical Description of the Tower of London, and its Curiosities,' published in 1774." I have referred to Maitland's 'History of London,' 2 vols. folio (Ch. xvi., p. 172), 1756. He describes at some length "the wild beasts and other savage animals in the Tower at this time, March 25th, 1754," and mentions "a Golden Eagle, which has been kept there upwards of 90 years," and "several other Eagles brought from different parts."—J. H. GURNEY, JUN. (Northrepps, Norwich).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

December 21, 1882.—ALFRED W. BENNETT, Esq., in the chair.

Prof. Adolph Ernst, of Venezuela, and Dr. W. C. Ondaatje, of Ceylon, were elected Fellows.

Prof. T. S. Cobbold exhibited specimens of *Ligula abdominalis* from the Bream, of *L. leucisci* from the Minnow, and of *L. monogramma* from the Grebe, to compare with *L. Mansoni* from man, in illustration of his paper mentioned below. The *L. abdominalis* is the same worm which is called *L. edulis* by Briganti, and is eaten under the name of "macaroni piatti."

Dr. Francis Day read a paper entitled "Observations on the Marine Fauna of the East Coast of Scotland." This contribution was the result of accompanying H.M.S. 'Triton,' sent to survey certain parts of the coast off Aberdeenshire, Kincardine, and Forfar, in July, 1882. He remarked that the migrations of the Herring had given rise to many speculations, but still required elucidation. The chief objects of migration would appear to be a search for a locality where spawn may be safely deposited and the species continued, or a search for food to maintain their existence; but occasionally it would seem the fish migrate from ground where incessant netting and capture render them uneasy or frightened. If going more seaward it is not unlikely their progeny would locate themselves where reared; but again the new location might be found unsuited and the shoal might return to its first habitat. Dr. Day mentioned facts connected with the Wick, Moray Firth, and Aberdeenshire fisheries, showing that at Wick a large form of Herring arrives about the beginning of the year and disappears about March, shoals of a smaller size appearing in May and June; while a larger, fatter sort come in great shoals, and spawn in August and September. As the Wick fisheries declined those of Fraserburgh increased in yield. It is evident that the fishing is now carried on further out to sea, forty or fifty miles being the usual limit. As to the mesh of the nets employed opinions are very different. The same may be said of the nature of the food of the Herring; but Dr. Day's observations point to this being minute Entomostraca, various ova, and small fishes. Whatever may be said by the fishermen of decrease in certain localities, the records of the fishery returns show a steady annual increase in the capture of Herrings from the commencement of this century until the present time. Dr. Day gave the results of his various dredgings, and particularly described the crustaceans and the molluscans, all of more or less well-known forms.

A report on the Echinodermata collected by Dr. Day formed a separate communication, by Prof. F. Jeffrey Bell. *Spatangus purpureus*, *Asterias violacea*, and *Echinus elegans* were abundantly represented. Of the last-

mentioned there were a very large number of small-sized, though not one large specimen. Entangled in the spines of many of them were small egg-cases with unfertilized ova within. The Ophiurids were only six in number, and but a single Holothurian, not in a condition for determination. There were eighteen different species of Echinoderms taken in all.

Further notes on the Zoophytes and Sponges obtained during the cruise of the 'Triton' were embodied in a paper by C. O. Ridley. These groups, though containing few species, were rich in individual specimens. The sponge *Amphilectus (Isodictya) Edwardi* was represented by finely developed specimens, and the *Suberites ficus*, in some examples, showed instances of the vents on a special excretory area.

Prof. T. Spencer Cobbold then read a description of *Ligula Mansoni*, a new human *Cestode*. The parasite in question was received from Dr. Patrick Manson, of Amoy. After an account of the animal, Dr. Cobbold remarked that the observations of M. Duchamp, taken in connection with the embryological studies of the late Dr. Bertolus, render it extremely probable that the *Ligula* of the Trout is the sexually immature state of the great broad tapeworm of man. If this genetic relation should be established by further researches, it is possible that the proscolices or six-hooked embryos of *Bothriocephalus latus* might, in place of passing through the ordinary piscine host, develop as immature *Ligulae* within the human body. We know that phenomena precisely analogous to this do actually occur in the case of *Tænia solium*, the proscolices developing into scolices or cysticerci within the human subject instead of passing into the flesh of swine. In this case the ultimate host becomes also the intermediary bearer. An act of cannibalism would certainly bring about the completion of the genetic cycle.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

December 19, 1882.—Prof. W. H. FLOWER, I.L.D., F.R.S., President, in the chair.

The Secretary made a report on the additions that had been made to the Society's Menagerie during the month of November, and called special attention to a collection of Reptiles from the Western States of North America, presented by Mr. Samuel Garman; and to a young Lynx, from Ballistan, presented by Capt. Baldock, R.A., which was apparently referable to *Felis isabellina*, Blyth.

Mr. Slater exhibited some photographs of a new Zebra, from Shoa, lately named *Equus Grevyi* by M. A. Milne-Edwards, which had been sent to him by that gentleman, and pointed out the differences which separated this animal from the nearly allied *E. zebra*.

The Rev. H. H. Slater exhibited, and made remarks on, the skin of a Shrike (*Lanius*, sp. inc.), which had been obtained near Spurn Point.

The Secretary exhibited, on behalf of Lord Lilford, the skin of a young

male *Emberiza rustica*, which had been taken at Elstree Reservoir on the 19th November last. Only two other examples of this bird had hitherto been recorded as having been met with in Great Britain.

Dr. Günther exhibited, on behalf of Sir Campbell Orde, Bart., a specimen of a Charr, *Salmo alpinus*, obtained in a loch in North Uist, being the first example ever obtained in this loch.

Mr. P. H. Carpenter exhibited, and made remarks on, some microscopical preparations of *Antedon Eschrichti*, in which a nervous plexus derived from the fibrillar envelope of the chambered organ was visible at the sides of the ambulacra of the disk.

Prof. Flower exhibited a photograph (presented to the Society by Mr. James Farmer) of Seal Point, Farallone Islands, off California, showing the immense number of Seals, *Otaria Gillespii*, frequenting that locality.

Prof. Flower read a paper on the Whales of the genus *Hyperoodon*, in which he pointed out that one of the most important points in the history of these animals yet unsolved was whether the large-headed form, with great development of the maxillary crests, called by Dr. J. E. Gray *Lagenocetus latifrons*, was a distinct species, or whether, as suspected by Eschricht, it was the adult male of the common form known as *Hyperoodon rostratus*. The author had asked Capt. David Gray to avail himself of his exceptionally favourable opportunities of observing these animals in their native haunts, to solve this question, with the result shown in the next communication.

A communication was read from Captain David Grant, S.S. 'Eclipse,' called "Notes on the Characters and Habits of the Bottle-nose Whale (*Hyperoodon*)," in which it was stated that he had killed 203 of these animals last season, and had traced in the males every gradation of development between the two forms, and had therefore conclusively proved that *Hyperoodon* or *Lagenocetus latifrons* had no existence as a distinct species. The communication was illustrated by sketches and photographs, showing the external characters and cranium in various stages of growth.

Mr. P. H. Carpenter read a paper on the classification of the *Comatulæ*. He criticised the method of formulation recently proposed by Prof. F. J. Bell, and pointed out its disadvantages for the purposes of classification, owing to its being inapplicable to those *Comatulæ* which have irregular arm-divisions. He explained his own system of formulation and classification, and stated that he believed it to be capable of dealing with all possible variations of *Comatula* structure.

Mr. F. Day read a paper on the identity of *Arnoglossus lophotes*, Gthr., with *Pleuronectes Grohmanni*, Bonap. A second paper by Mr. Day contained remarks on some hybrids between Salmon and Trout.

A paper by Messrs. Godman and Salvin was read, describing some Butterflies from New Ireland, received from the Rev. G. Brown and Mr. E. L. Layard. Among these were examples of two new species, named respectively *Prothoe Layardi* and *Danaïd adustus*.

Mr. Oldfield Thomas read a paper containing descriptions of two new species of Fruit-Bats of the genus *Pteropus*, from the Caroline Islands. The author proposed to call them *Pteropus phæocephalus* and *P. breviceps*.

A communication was read from Major G. F. L. Marshall, containing some notes on Asiatic Butterflies. A species of *Amecera* was mentioned as new to the Beluchistan fauna, and three species were described as new.

Mr. G. A. Boulenger read the description of a new species of Lizard from Dacotah, based upon some specimens lately presented to the Society's collection by Mr. S. Garman, of the Museum of Comparative Zoology, Cambridge, Mass., and proposed to name it *Sceloporus Garmani*.

Mr. Arthur G. Butler read a paper in which he gave an account of a collection of Spiders made by the Rev. Deans Cowan in Madagascar. In addition to many interesting and singular forms were specimens of the curious-tailed species *Arachnoura scorpionoides* from Central Madagascar. Six new species were described.

Mr. W. N. Parker read a paper on the anatomy of the Indian Tapir.

Mr. Herbert Druce read a paper descriptive of new species of Moths, chiefly from Western Africa and New Guinea. Fifteen new species were described, as also was a new genus of *Chalcosiidæ* from New Guinea.

January 16, 1883.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of December.

Mr. H. E. Dresser exhibited, and made remarks on, a specimen of *Merops philippensis*, which was said to have been obtained near the Snook, Seaton Carew, in August, 1862.

Lieut.-Colonel Godwin-Austen read the third and last of a series of papers on the shells collected in Socotra by Prof. J. Bayly Balfour. The freshwater shells of Socotra were stated to belong to the genera *Planorbis*, *Hydrobia*, and *Melania*. Not a single bivalve was obtained. Four species were described as new.

Prof. E. Ray Lankester read a paper on the right cardiac valves of *Echidna* and of *Ornithorhynchus*. Seven additional specimens of the latter animal had been examined since the author's former paper on this subject had been read, all of which, whilst showing interesting variations, agreed in the absence of the septal flap of the right cardiac valve. This character was shown to exist also in *Echidna*, and was therefore presumed to be a distinctive feature in the structure of the Monotremes.

A communication was read from Mr. F. Moore, containing the descriptions of some new genera and species of Asiatic Lepidoptera Heterocera.

A communication was read from Mr. G. B. Sowerby, jun., in which he gave the descriptions of five new species of Shells from various localities.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

A History of British Birds ; with Coloured Illustrations of their Eggs. By HENRY SEEBOHM. Roy. 8vo, Part I. London : Porter. 1882.

HEWITSON'S 'Coloured Illustrations of the Eggs of British Birds,' which had reached a third edition before the author's death in May, 1878, has long been the standard work on British Oology. But, although the plates are excellent, and will probably never be surpassed for their fidelity to Nature, it must be admitted that the text as regards many species is out of date. Not only do we know a great deal more about the nidification of certain birds, concerning which little had been ascertained when Hewitson wrote, but several species have since been added to the British list of which no mention is made in his work. The eggs of these have, therefore, to be figured, and some account furnished of their nidification. On this account the work recently commenced by Mr. Seebohm, which will supply these *desiderata*, will be very generally welcomed.

We understand that this new publication will be completed in six parts, issued at a guinea each to subscribers, the first part of which is now before us. We are not sure that we like the tinted background on which the eggs are drawn, as it seems to detract from the richness of tone in some of the more highly-coloured eggs, although it answers well for eggs which are pure white.

The text contains not only a description of each egg and its varieties, but also a very full account of the life-history of each bird. What this comprises is thus indicated by Mr. Seebohm :—
 "The habits of the bird during the breeding season, at the two periods of migration, and in winter, its mode of flight and progression on the ground, in the trees or on the water, its song and its various call- and alarm-notes, its food and the mode of procuring it at different seasons of the year, its migrations, the dates of arrival and departure, the routes it chooses and the winter-quarters it selects, and above all every particular respecting its breeding [such as choice of situation, materials of nest,

number and colour of eggs, &c.], all these particulars are its real history."

If we may conceive the works of Yarrell and Hewitson rolled into one, with corrections, emendations, and important additions, and with woodcuts as well as coloured plates, such a work will be Mr. Seebohm's when completed.

Report on the Migration of Birds in the Spring and Autumn of 1881. By MESSRS. HARVIE BROWN, CORDEAUX, KERMODE, BARRINGTON, and A. G. MORE. 8vo, pp. 101. London: West, Newman & Co., Hatton Garden. 1882.

Now that the British Association for the Advancement of Science has formally appointed a Committee to obtain observations, and the Master and Brethren of the Trinity House, the Commissioners of Northern Lights, and the Commissioners of Irish Lights have concurred in sanctioning the co-operation of the lighthouse-keepers and the keepers of light-ships all round the coast, the questions affecting this subject of so much interest to zoologists seem in a fair way of being solved; albeit some considerable time must elapse before a sufficient series of observations can be collected for utilisation.

At present the matter stands thus:—The services of the light-keepers have been enlisted on the east coast of Scotland at 29 stations; on the east coast of England 36; on the west coast of Scotland 40; on the west coast of England 40; and on the Irish coast 40. In other words, there are at the present time 185 stationary observers on the look-out for the arrival and departure of birds, with instructions to observe and note the time of day or night at which the birds are seen, the direction of the wind and the direction in which they are flying, and the temperature, and to identify the species if possible, or to describe, as accurately as may be, the general appearance as regards both size and colour. They are supplied with printed forms to be filled up and transmitted at the end of the year to the different members of the British Association Committee, who have undertaken to collect and report upon them. Thus the returns relating to Scotland have been arranged by Mr. Harvie Brown; for the east coast of

England by Mr. Cordeaux; the west coast of England by Mr. Philip Kermode; and those for the coasts of Ireland by Messrs. R. M. Barrington and A. G. More, these gentlemen having the advantage of the advice and direction of Professor Newton, who is also a member of the Committee.

The third report of the Committee is now before us, and embodies a large number of statistics, from which the Committee will no doubt later be enabled to deduce valuable conclusions. We need not occupy space here by giving extracts from the Report, for we make no doubt that every ornithologist will secure a copy for perusal in its entirety.

A Manual of the Birds of New Zealand. By WALTER L. BULLER. 8vo, pp. 107, with thirty-seven uncoloured plates. G. Didsbury, Wellington, N. Z. Trübner & Co., London, 1882.

MR. BULLER's well-known quarto work on the 'Birds of New Zealand,' published in 1872, with its admirable coloured plates by Keulemans, has long been out of print and scarce. A new edition is announced, but pending the preparation of this the author has issued an octavo Manual with the above title, and illustrated with facsimiles of the plates in the quarto work, reduced by photolithography, but uncoloured.

As tending to encourage and promote the study of Ornithology in the Antipodes by placing a reliable yet inexpensive guide within reach of naturalists and collectors, Mr. Buller has been well-advised in this publication, which, we have no doubt, will be found useful by many, and especially by those who do not possess the former and larger work.

We must confess, however, that we are disappointed with the text, which does not exhibit that advance and improvement upon the quarto which we should have expected after an interval of ten years. The 'Transactions of the New Zealand Institute' contain many valuable records printed during this interval which might have been quoted by Mr. Buller with advantage; as, for example, that relating to the occurrence in New Zealand of the Australian Roller (or Dollar-bird, as it is termed by the colonists), *Eurystomus pacificus* (Trans. N. Z. Instit., vol. xiv., p. 265).

No information of any kind is given about the nesting habits of the Saddle-back, *Creadion carunculatus*, Gmel., of which so interesting an account has been published by Mr. T. H. Potts, who has also described the changes of plumage which this bird undergoes, but which are not noticed by Mr. Buller. Similarly, we find no reference to the nidification of the Orange-wattled Crow, *Glaucopis cinerea*, Gmel., of the Bell-bird, *Anthornis melanura*, nor of the Pied and Black Fantails (*Rhipidura*), although nests and eggs of all these have been described by Mr. Potts, who has likewise directed the attention of ornithologists to the curious fact that the two last-named species not unfrequently interbreed (Trans. N. Z. Instit., vol. ii., p. 64), a noteworthy observation which Mr. Buller would have done well to quote.

The account given of the Kea, or Mountain Parrot, *Nestor notabilis* (p. 38) is very meagre, in view of all that has been published on the habits of this remarkable bird since the date of Mr. Buller's quarto work;* and the latest information relating to *Notornis mantelli* is too briefly given in the statement that since the appearance of his former work a third example has been "lately captured by a party of rabbit-hunters with dogs at a place known as 'Bare-patch,' between Maruia and Upokororo Rivers, on the plains eastward of Te Anau Lake." For "lately" we should read "in 1880," and it would surely have been desirable to direct attention to Professor Jeffery Parker's description of the skeleton (Trans. N. Z. Instit. xiv., p. 245), and to inform the reader that this specimen of *Notornis* was forwarded to England for sale (cf. Newton, P. Z. S., 1882), and was ultimately purchased for the Dresden Museum, where it may now be seen.

Describing the Black Oystercatcher of New Zealand, "*Hæmatopus unicolor*, Forster" (*rectius* Wagler) Mr. Buller makes the extraordinary remark that "this species, although far more abundant in New Zealand than the Pied Oystercatcher, appears to have a more confined range, *for it has never yet been recorded elsewhere!*" It happens, however, to be quite as common in Australia as it is in New Zealand, inhabiting all parts of the Australian coast, as well as Tasmania and the Islands in Bass's Straits. It is the more surprising that Mr. Buller should have overlooked this, since in his quarto work he has identified his *H. unicolor* with *H. fuliginosus*, Gould, from Australia!

* See 'Zoologist,' 1880, p. 57; 1881, p. 290.

Gallinago pusilla, Buller, we perceive, still figures (p. 59) as specifically distinct from *G. aucklandica*, although, upon an examination of the type-specimen some years ago and a comparison with several examples of *aucklandica*, we failed to detect any difference, except in point of size, *pusilla*, as its name would suggest, being slightly smaller, a circumstance by itself inadequate, in our opinion, to warrant specific separation. If new species are to be founded in this way merely on a difference of size in individual examples, there will indeed be no limit to "species-making!"

We are at a loss to understand why *Tringa acuminata*, Horsfield, or, as Mr. Buller has it (p. 55), "*Limnocinclus acuminatus*, Horsf.," should be separated from *Tringa* by the interposition of the genera *Numenius*, *Recurvirostra*, and *Himantopus*. Nor do we see any reason why the specific name *baueri* should be retained for the New Zealand Godwit, since that was merely a "museum-name" bestowed by Natterer (not Naumann, as Mr. Buller has it), and no description was published of the bird to which it was applied.

This leads us to remark that it would have been well if Mr. Buller had printed after each specific name adopted by him a reference to the original description, a course which would have added little to the cost of printing, and would have saved the reader a good deal of trouble. Let us hope that should another edition be called for, as we trust it may, these and other useful emendations will be made.

Out in the Open: a Budget of Scraps of Natural History gathered in New Zealand. By T. H. POTTS. 8vo, pp. 301. With illustrations. Printed by the Lyttelton Times Company, Limited, Gloucester Street, Christchurch, N.Z. 1882.

UNDER this title the author has reprinted a number of articles contributed by him to 'The New Zealand Country Journal,' with a few revised papers read before the Philosophical Societies of Wellington and Canterbury.

Many of our readers probably do not see the 'Transactions of the New Zealand Institute' and other colonial journals in which

at intervals these essays have appeared, but the name of the author will be familiar to them in connection with the many interesting articles which Mr. Potts has contributed to 'The Zoologist.'* As an outdoor observer he seems to have had excellent opportunities for becoming acquainted with the life-habits and mode of nidification of many of the less-known New Zealand birds, and has turned these opportunities to good account by a systematic entry in his note-book on the spot of all observations made by him, storing them up for subsequent utilisation. This, no doubt, is the right way to proceed, and the way to avoid the mistakes which would be sure to occur by trusting to memory only.

Amongst the chapters in the present volume may be cited that on the White Heron (pp. 1—8), on New Zealand Hawks (pp. 37—50), the Bell-bird (pp. 113—116), Parrots (pp. 176—183), the Kea (pp. 184—193), on rare or little-known birds (pp. 194—203), Seafoal (pp. 204—220), and "On recent changes in the Fauna of New Zealand," which last-named chapter, like that on the Kea, has already, as noted below, appeared in 'The Zoologist.'

Amongst the illustrations we notice the nest and eggs of the Bell-bird (*Anthornis melanura*), a Kea perched on the back of a sheep, and the nest of the Saddle-back, *Creadion carunculatus*.

It would perhaps have been well had Mr. Potts indicated in every case the particular journal in which each chapter of his book originally appeared, quoting volume and page, instead of leaving the reader to discover it for himself, perhaps with some trouble and inconvenience, for New Zealand publications are not quite so accessible in this country as Mr. Potts would have us suppose.

* See his "Notes on the Birds of New Zealand," 'Zoologist,' 1871, pp. 2793, 2853; 1872, pp. 3052, 3089; 1874, pp. 3898, 3936, 3979, 4014; 1875, pp. 4409, 4477; "On the habits of the Kakapo, or Night Parrot of New Zealand," 'Zoologist,' 1873, p. 3621; "On recent changes in the Fauna of New Zealand," 1874, p. 4135; "On *Apteryx haasti*," 1874, p. 4158; and "On the habits of the Kea, or Mountain Parrot," 1881, p. 290.

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ON TRINOMIAL NOMENCLATURE.

BY JOEL ASAPH ALLEN.

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By some remarks on trinomial nomenclature in the very able and discriminating review of 'The Coues Check List of North American Birds,' published in the October number of 'The Zoologist' (1882, p. 396), I am forcibly reminded how little our English fellow-workers understand what the trinomial nomenclature of American zoologists really is, and how little they appreciate its purpose and import. To most English authorities who have referred to it, it seems to have proved the most thorough stumbling-block imaginable; indeed, to us on this side the water it is a mystery that it should be so universally misunderstood.

To explain clearly the points at issue it is necessary to refer briefly to the recent history of our knowledge of North American birds. Those who have closely followed our ornithological literature for the past twelve years must appreciate how thoroughly the Ornithology of North America has been studied, both in the field and in the museum, or how vast is the amount of material which has passed under the critical eye of experts. The whole of our immense trans-Mississippian territory, as well as Florida, Alaska, and portions of Mexico and the British Possessions, has been traversed and more or less carefully explored by well-trained collectors, their accumulated spoils amounting to not less than 50,000 to 75,000 specimens. Except

in case of the rarer forms, the generalisations reached have been based on hundreds of examples of each species and subspecies, gathered from every portion of the habitat of the form in question. The elaboration of this material has resulted in the discovery of intergradation between forms whose specific distinctness was not previously even questioned, and which would now pass as well entitled to specific recognition were the connecting links unknown. Furthermore, it has been found that various portions of the continent present phases of differentiation, more or less strongly marked, peculiar to each, and which affect the greater portion of the species by which they are inhabited; while the intermediate and connecting regions furnish a gradual transition between the forms typical of the remoter districts—a transition as gradual as, and correlated with, the changes in the geographical and climatic conditions of the connecting area. In other words, these investigations have led to the recognition of certain general laws of geographical variation which are accepted by all of our ornithologists of recognised authority.

In consequence of the accumulation and study of this immense amount of material it has been found that three, four, or even half a dozen species formerly in good standing, because known from only a few examples, really form one specific group, with more or less strongly differentiated types in different portions of the general habitat, which, however, are inseparably connected by series of examples from intermediate districts. While all these intergrading forms are, in consequence of their known intergradation, referred to a single species, each differs so much from the other, as they approach their extreme phases of divergence, that the differences seem too great to pass unnoticed, and are therefore recognised nominally, and at the same time in such a manner as to indicate their true status and relationship. The forms trinominally designated are simply well-marked local forms, geographical races, incipient species, subspecies, or “varieties,” in the sense in which the latter term is commonly employed.

To refer now to the text which has given rise to this bit of preaching, the writer says: “For instance, to take the first example in the ‘Check List,’ if *Turdus migratorius propinquus* is not *Turdus migratorius*, why not let it stand as *Turdus propinquus*?” To this we answer, because it would be giving

specific rank to what is not a species. "If it is only," continues our reviewer, "a variety of *Turdus migratorius*, why let it stand as a species, on the same footing as the type from which apparently it so slightly differs?" To this we say, it *does not* stand as a species. but merely as a subspecies or variety.* *Trinomials are never used to designate a species*; they always stand for what are commonly called subspecies or varieties. "*Turdus migratorius propinquus*" is only a short way of writing "*Turdus migratorius*, subsp. *propinquus*," or "*Turdus migratorius*, var. *propinquus*." It is so understood by all who use it, and in no other sense. Our trinomials result simply from the dropping of the cumbersome connective "subsp." or "var." commonly used in cases where we employ simply the trinomial. It is not therefore, to borrow the words of our reviewer, "simply to return to the old method that Linnæus is celebrated for having—as we hoped—caused his followers to discard, naming a bird by a diagnostic sentence." Neither has it the remotest tendency or bearing in that direction, either in origin or function. Instead of doing such violence to the Stricklandian Code,—instead of being "both retrograde and misleading,"—it is a device to meet simply and explicitly, in accordance with the *spirit* if not with the letter of that "Code," a condition of things unknown and unsuspected when that, in most respects, admirable system of nomenclatural rules was conceived. Instead of bewailing and denouncing the "evil example of the Americans" in the use of trinomials, we sincerely hope that Europeans will examine into the occasion, basis, and import of this practice, which is believed by those who use it to tend merely to simplicity and conciseness, while it clearly recognises the status and relationship of the subspecific types to which, as above said, it is alone applied.

In consequence of the recent thorough exploration in the interest of Science of nearly every part of our "Great West," it may be safely said that no other equal portion of the earth's surface is so well known ornithologically as North America, and that no amount of material from a like area has ever passed through the hands of specialists. This statement is made in no

* Dr. Coues, it is true, gives it a distinct number, as we think unwisely, and contrary to his and all other previous check lists of North American birds; and in the present case we fear his so doing has aided misconception on the part of the reviewer here referred to.

boastful spirit, but in recognition of the fact that it is the result simply of favouring circumstances, which it is perhaps hardly necessary in this connection to enumerate. It is not therefore wholly strange that the exigencies thereby developed should be imperfectly appreciated by Old World authorities. When similar opportunities for investigating the bird-life of other large areas have been enjoyed, the convenience, if not the necessity, of trinomial nomenclature will be more readily conceded — when intergradations have been traced between many allied forms now held to be specifically distinct; for it is not supposable that North America is exceptional in respect to the matter of geographical variation in animal life under diverse conditions of environment, resulting from differences of latitude, elevation, and climate.

ZOOLOGICAL NOTES FROM GIBRALTAR.

BY Capt. E. F. BECHER, R.A.

BEING at Gibraltar during the spring of 1882—from 28th March to 5th April, again from 24th to 30th April, and from 25th to 30th May—I paid particular attention to the vernal migration of the birds visiting Tangiers, an excellent place for observation. I was grievously disappointed. Olcese, the local naturalist, informed me that he never remembered seeing so few migrants; he had only observed a few stragglers on the well-known plain called the Marshan, which, according to Col. Irby, seems to be “the starting-point of half the small birds which visit Europe.” Presumably the reason for this scarcity was the unusual drought in the interior. As an example of the exceptionally dry season, it may be stated that the registered rainfall at Gibraltar was about 17 inches against 56 the previous year.

The sergeant at the signal station at Gibraltar observed very few migrants passing over, and it would be interesting to know the result of observations elsewhere—whether a falling off of the number of migrants was observed in any other locality. The drought, or some other cause, also appeared to have affected the Lepidoptera, for butterflies on both sides of the Straits were unusually scarce, even in the cork woods near the Rock—generally such a favourite locality.

A pair of Bonelli's Eagles, *N. fasciatus*, bred as usual on the

east face of the Rock, the nest being situated on a ledge below the highest point. The female was first observed on the nest on the 28th January; the young were fledged and gone about the 14th May. Only a single pair breed there yearly, for as soon as the young can fly they are driven away, doubtless because the old birds know that the supplies obtainable in the neighbourhood are limited. By the 25th May the spring migration, such as it was, had ended.

On the occasion of one of my visits to Tangiers I noticed rather a peculiar position selected for a nesting-place by a Common Swallow, *H. rustica*; this was inside a small entrance-hall in Bruyeaud's Hotel; a cornice runs round it about two feet from the ceiling; at one of the corners the nest was placed; at night the male used to roost on the cornice about a foot from the nest. The peculiarity about the choice of this position was that it was the most noisy place in the whole house; at one side of the hall was the main entrance, opposite to this the staircase, the dining-room and smoking-room doors being on the other two sides; a large lantern hanging from the centre of the ceiling, which was always kept burning till a late hour.

A Squacco Heron, *Ardea comata*, was shot "between the rivers," about four or five miles from the Rock, on the 20th May; Col. Irby says he never observed one near Gibraltar. There were three Crested Coots, *Fulica cristata*, shot in the same locality, the first on the 27th May, the other two a few days later; the plumage of all three was very much worn; Col. Irby "never saw this species in Andalusia." A Kingfisher, *Alcedo hispida*, was seen in the cork woods, near Gibraltar, on the 23rd May; I myself saw one on the 5th June outside the line-wall, between the Ragged Staff and the Waterport; Col. Irby says, "I have no record of its occurrence during the breeding season, *i. e.*, not later than the end of April; the majority arrive in October, leaving in March."

Although the avifauna of the Straits of Gibraltar has been so well investigated by Col. Irby and others, there are still species peculiar to each side of the Straits, the occurrence of which on the other side would be a most interesting event,—*e. g.*, the Blue Titmouse, *P. cæruleus*, is found on the Spanish side, but is represented on the African side by the Ultramarine Titmouse, *Parus teneriffa*; a similar case is that of the Common Chaffinch,

Fringilla cœlebs, and the North African *F. spodiogena*: while analogous variation is seen in the case of some butterflies. It is curious that under almost similar conditions of existence these variations should be persistent. I am not aware whether the North African Chaffinch migrates South, but it is supposed never to cross the Straits; it thus opens a very interesting question on the subject of migration—that these two birds, (*F. cœlebs* and *F. spodiogena*) should respectively stop short on the very shore of a narrow sea.

The Apes on the Rock had bred well, and it was interesting to watch them on the trees in some of the gardens. On one occasion I saw at least three very young ones with them, and I particularly noticed the way in which their mothers carried them—which as a rule was on their bellies, the young ones holding on with their feet and hands as their mothers jumped from branch to branch; sometimes the mothers holding them with one hand, but usually the little one had to cling on unaided; sometimes they were carried on their mothers' backs.

As regards the land shells of Gibraltar, from information I have gathered and from my own observation, there are twenty species found on the Rock, of which *Pupa calpeana* is supposed to be found in no other locality. The following is the list:—*Helix aspersa* (Mull.), *H. acuta* (Drap.), *H. pisana* (Mull.), *H. marmorata* (For.), *H. luteata* (Parr.), *H. sherzeri* (Geleb), *H. lenticularis* (Morel), *H. conspurcata* (Drap.), *H. hyalina*, *H. coquandi* (Morel), *H. lactea*, *H. apicina* (Ferr.), *Ferrusaica vescoi* (Morel), *Bulimus truncatus*, *Pupa calpeana* (Wester.), *Cyclostoma elegans*, and four unnamed; a white variety of *H. lactea* is also found at the highest part of the Rock. In summer every twig and dried remains of herbage is laden with *Helices*, chiefly if not all *H. pisana*, the fierce heat of the sun apparently not harming them; of the above list all but *P. calpeana*, and three of the unnamed ones are more or less common. I cannot suppose that the list is complete, but that if the gardens were thoroughly searched, containing as they do a number of imported shrubs and plants, some new species would be found. In conclusion I would add that, uninviting as the Rock of Gibraltar looks, especially in summer, yet to those interested in any branch of Natural History there is a ready field for their investigation. Well worked as the Ornithology of the Straits has been by Col. Irby and other

naturalists, it is still far from being exhausted. To trace the connection of the rock with Africa, in regard to species of any class, would be another interesting study.

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from p. 68.)

SNAKES can be kept warm in a box unprovided with any such mechanism by movable tins of hot water, or, better still, by an india-rubber water-pillow, though there are great disadvantages attending each. Here the same principles hold good; the larger the vessel the longer will it continue to evolve heat, one being preferable to two of half its capacity, unless no obstacle exist to the two being refilled at very short intervals; here, too, it will be necessary to wrap up the tins, not only for the purpose of economizing the heat, but to prevent the snakes from burning themselves. Care must be taken not to run into the opposite extreme, and cover them so thickly that the heat is all kept in and the poor reptiles get none of the benefit of it. That is the reason for choosing coarse earth for our tray; a fine, close powder would be too perfect a non-conductor. The tin or pillow may be cased in a flannel bag, but should rest upon some material which will prevent evaporation from below, since whatever heat goes off in that direction is wasted; a pile of tightly-pressed newspapers is as good as anything. If a tin is chosen, a square shape is best, the upper surface just large enough for the serpents to coil upon, with rugs over all; *they* will find out where the greatest amount of radiation is taking place, to a degree.

In arranging some rough paraphernalia for an attempt at artificial incubation with snakes' eggs, I once fell into this error of over-precaution against escape of heat. A tin holding six gallons of boiling water was so completely shielded that at the end of seven days it was scarcely possible to bear the hand upon it when it was unwrapped, while the eggs were cold and dead. This system is adapted to several articles of manufacture for domestic comfort and convenience.

A cover of flannel or quilted stuff, the thicker the better, should be provided for the vivarium, and always put on at night;

it ought to be well-fitting like a garment, but the four sides may have free borders unattached to each other, only joined—hinged, as it were—to the top piece. Thus, when the “cosy” is on, the edges will be in apposition and the cage perfectly covered, and at the same time it allows one or more sides to be turned up to admit light during the day; for it is often advisable to partially shelter the glass in this way, and effects a vast saving of heat. If the cage stands, as it probably will, at the window, then the zinc top and the two ends only must be covered, the front and back squares being folded above, to prevent the room being darkened, as well as to afford a view of the reptiles—always let them see, as well as be seen. If, however, it stands in any other situation, then it will be enough to turn back the front portion alone; but if the cage is not designed to transmit the light, it is just as well to have the back (and perhaps the ends, too) made of wood or metal. The use of the cover will naturally vary with the season, and according to incidental circumstances affecting the local temperature.

The ordering of the interior of the cage will be discussed when we come to consider that topic generally. There must be a forked branch, of course, of suitable size, as in the den last described; one end can be fitted into a hole of the perforated floor, while the other may be secured to the zinc at an angle of the top with wire or a rivet. A pan of water will take the place of the tank, and the only thing that need be said about it here is that it should not be put in until the sides of the cage are thoroughly warmed—otherwise the vapour which it will be impelled to throw off by the heat below will condense and cloud the glass. Tepid, not cold, water is to be introduced when the pan is refilled, as it should be every day. The kinds of snakes which may be kept in such a cage will also be allotted to a separate chapter; but I may remark in this place that when it is intended to contain young constrictors, of large and powerful species, the sides must be made of plate-glass.

A small orange-tree, fuchsia, geranium, or other plant with tolerably sturdy stem, has a very pretty appearance in such a case with Green Whip-snakes, or any whose habit of body is excessively slender, like the Tree Snakes proper; but does not do for bulkier reptiles, even if the branches will support their weight. Coming out of the water, they glide and burrow about

the earth in which it grows, thus acquiring a coat of mud which they transfer to the gravel and bath, and smear about the glass. Such an arrangement, however, is well suited to serpents belonging to *Philodryas*, *Herpetodryas*, and allied genera, which live almost entirely among the leaves, their long lithe bodies twining gracefully in and out between them, and scarcely distinguishable when at rest by the unaccustomed eye. As a rule, "pretty" effects are to be mistrusted, where snakes are in question. A crystal vivarium, with beautiful serpents roaming and climbing about within it, is quite handsome and striking enough, if kept clean, without the addition of any adventitious decorations. Allusion has already been made to the stucco rock-work and mirrors displayed in the four reptile-cages opposite the Lions in the Antwerp Jardin Zoologique—*et præterea nihil* in some of them, very often!—but the most atrocious cruelties are perpetrated to obtain picturesque and *bizarre* effects. Unhappy snakes have been compelled to writhe in a narrow interspace between two sheets of glass as window-transparencies and fire-screens; have been prisoned in tubes of water surrounded by flowers; and have fretted their lives away in miserable little bowl-shaped shades, made to cover stuffed birds, hanging on drawing-room walls. Some writers have even asserted that the inhabitants of certain countries *wear* them commonly as bracelets, necklaces, and even as earrings, passed bodily through the lobe of the ear—a statement which requires a good many grains of the chloride for its deglutition when we remember the universal horror with which they are regarded in every country by the only class likely to be guilty of such a practice, the impossibility of retaining them in such a position, and the certainty of their biting if they could be so retained. Still, the point is not of much moment here, since I presume that the reader will value his serpents rather as materials for the study of Ophiology, than as the means for indulgence in personal adornment.

It is usually advantageous to keep newly-born snakes of all species in feeding condition through their first winter in captivity, even if they belong to a comparatively cold habitat, and adults of the same kind are allowed to hibernate. For these, or for any tiny snakes of a few inches in length, especially for a single specimen of some brilliantly-coloured, rare, or delicate serpent, a smaller and

more easily managed hot cage may be contrived with very little expense. An ordinary gold-fish globe, or vase, is filled with fine gravel, or coarse sand, up to the level of its largest diameter, and furnished with a small saucer or pot, buried to to the rim, for water, and a miniature tree. Over the top a piece of muslin or stout gauze is passed; this may be loose and baggy in the centre, so as to permit the tree to extend above the top of the globe, and thus increase the space for exercise; but it must not be forgotten that this elevated part will practically be in the open air as far as warmth is concerned, and in any case the gauze is to be fastened very tightly under the everted brim—an ordinary elastic band is not strong enough. The globe, now complete as a cage, should rest upon a cylindrical hot-water tin, whose transverse diameter is not less than the greatest breadth of the glass. This tin may hold about four gallons, and must be concave at its upper end in such a way that the globe sinks into it to the level of the surface of the gravel, the convexity and concavity being adapted to each other as accurately as possible. A very thin piece of flannel may interpose between the glass and metal, but the tin (which will require refilling with boiling water about once in thirty-six hours) should be thickly enveloped in felt. A circular imitation rockery, to mask the tin, can be constructed of cork, and will pass on and off over the top like a ring; or, if rather elaborate and stocked with ferns, may be left undisturbed, and the apparatus put together within it, or removed piecemeal as required. This has a highly ornamental appearance, and involves no sacrifice of proprieties. I have used a glass clock-shade for a similar purpose, but it is a very awkward arrangement; if anyone should adopt it, they had better take off the little feet on which the stand rests, so that, whether it be kept on the mantelpiece or upon a water-vessel, the under part may lie flatly upon the warm surface.

We may now consider the accessories incidental to the conservation of serpents which will thrive under ordinary climatic conditions, and require no increase of temperature; and it is to this section that I most especially and hopefully devote myself—not only because it appeals to the greatest number of amateurs in this branch of Natural History (from the school-boy who snatches a fearful joy in contemplation of a contraband grass-snake in his desk, upwards), but because the observations made

under circumstances which are as little as possible influenced by artificial surroundings are far more trustworthy than any which can be conducted in heated cages. I write here, keeping in mind our English atmosphere and using our own snakes for illustration; but the remarks will bear reference equally to the serpents of any country, tropical, subtropical, or temperate, studied in their native habitat. Furthermore, a big snake presents no special characteristics which render it preferable to a small one for most scientific purposes; and no one will doubt that a common grass-snake or adder will offer many opportunities in its own territory for records more valuable to science than anything which can be gleaned from the largest Boa Constrictor, or other ophidian immigrant, whose existence is maintained in an abnormal environment.

The construction of a vivarium for this class of serpents obviously admits of the greatest variation. One must aim at obtaining the utmost facilities for gaining a constant insight into the phases of their changeful life, consistent with altering the immediate relations of that life in no way prejudicial to the creatures themselves; avoiding the rock of raree-show "prettiness" on the one hand, nor plunging on the other into the whirlpool of ultra-conformity to "Nature," which will engulf all chance of ever making an observation at all. This latter evil is exemplified to some extent in the terrarium established in the beautiful gardens of the Zoologische Gesellschaft at Hamburg. It is a large and handsome structure, situated in the open air; the sides are entirely of glass, and it contains a tasteful display of shrubs, ferns, and mountainous rockeries with miniature cascades, &c. All very natural and homelike for the snakes, but somewhat disappointing to the visitor who comes to look at them, since not a tithe part of the number it houses can ever be seen at one time. A great many of the European species are said to be represented in this terrarium; having no heating appliance, it is half-filled with dead leaves for their protection all through the long and severe winter, owing to its exposed position. The welfare of an animal in confinement does not demand for its provision so close an adherence to its native *Lares et penates* as this, which would indeed be exceedingly difficult to carry into execution with brutes of larger growth.

A friend of mine, living in the West of France, some time ago

determined to investigate the habits of common snakes under what appeared to him to be the most favourable circumstances, by keeping them in an enclosure upon his lawn, wherein they might be considered to live in a perfect state of nature. A circular space, between sixty and seventy feet in circumference, was surrounded with a wall four feet high; the foundations of this wall were dug to a depth of three feet, to preclude the possibility of any reptile burrowing its way beneath it to the outer world; for no trouble or expense was spared to insure completeness in every detail by the designer. Part of the ground was planted with thick, coarse grass and rank weeds, while the rest was left bare; there was a huge pile of rustic wood and stone in the centre, to hide a mound of rotting vegetable matter, accessible to the snakes through the interstices of the rockery; and a small pond gave lodging to an abundance of live food in the shape of frogs, fish, and newts. The wall was plastered smooth as glass on its inner side, all overhanging or undergrowing boughs and stems were cut away, that no prisoner—if prisoners they could be called—might find the means of escape, and the snakes were turned in, scores, if not hundreds of them; grass-snakes like ours, for the most part, though other kinds indigenous to the continent, of which shall afterwards make mention, were there too. It was a great success—for the snakes; they did remarkably well, as might be expected in such luxurious quarters, fed well, bred well, but were scarcely ever visible. If one walked stealthily up to the wall and peeped over, there might be time to note two or three indistinct objects flash away into the tangled bush with an angry hiss, certainly; but neither this nor going in amongst them and stirring them up from their jungle, where they lay matted like the blades of grass, could properly be termed studying their habits in a state of freedom. I am afraid the very pretence soon dwindled down to an undisguised sensational exhibition to guests at night; the wall was surrounded as quietly as possible in the darkness, and the light from several *lanternes sourdes* suddenly turned on. It would be some moments before the snakes, lizards, and frogs, bewildered by the illumination in the midst of their nocturnal rambles and avocations, contrived to stow themselves away; and the whole enclosure presented a creeping, leaping, hissing, slimy nightmare for herpetophobic people to shudder at. If

reptiles bore a high commercial value, the place might have proved a capital speculation as a nursery; the eggs deposited in the rotten leaves were hatched freely, and in the spring swarms of little serpents might be seen about the stones on a sunny day, or surprised in pursuit of tadpoles and newly-emancipated frogs after dark. And from these young ones was gathered perhaps the only result of the costly experiment—an answer to the question often asked, Why are snakes not more numerous?

All these creatures are very prolific, whether ovo-viviparous or oviparous. Boas, vipers, and various colubers belonging to the former class which have bred in menageries, have given birth to batches of fifteen, twenty, thirty, or even a greater number; and in those cases where less have been produced, there have usually been indications to show that many more ova have never reached maturity, as they probably would have done had the mother remained undisturbed in her native wilds. Our common English Snake lays from twenty to fifty eggs at a time, and it may reasonably be conjectured that most, if not all, that are laid are hatched; the parent's instinct leads it to deposit them in some situation favourable for their germination, and the eggs themselves are not exposed to the depredations that imperil the contents of a bird's nest. Yet the snake is a reptile comparatively scarce in our midst, and does not increase fifty, twenty, or even twofold in localities where they are unmolested by the hand of man. My friend found an explanation of the fact in the many animals which devour them greedily, in addition to their well-known enemies, mongooses, pigs, storks, and pike. Any bird or fish that will eat a worm will take a snake of corresponding size; and, curiously enough, the very things upon which they feed when they are big enough, seem to prey upon them with an avidity which one might fancy inspired by an impulse of self-preservation—thus, frogs, lizards, and tritons which had been intended to furnish the larder, took a dietetic revenge on the early snakelings. Toads, hedgehogs, and even slow-worms made away with them, while flocks of birds by day, and rats, stoats, weasels, polecats, and other small deer at night were undoubtedly attracted to that happy hunting-ground, to the notable diminution of its ophidian population. After a while snakes began to appear outside the enclosure, about the lawn and shrubberies, and it was supposed, since not the tiniest

aperture could be discovered, that they were carried over the wall by marauding cats and fowls. Finally, two large Black Vipers having been added to the collection, a panic seized upon the household, which communicated itself to the host at length; no one would venture within the circle any more; and a couple of pairs of Peacocks, the most determined of ophiophagists, were permitted to wage a war of extermination upon the remaining reptiles.

This is rather a digression from our subject; but I relate the incident to show how unsuitable an arrangement which would at first strike one as being admirable, on account of its fidelity to Nature, may be for the work of observation. (I intend, however, to turn a number of Common Adders into a large walled manure-pit in a stable-yard, and see what I can make of them there, as they yield less satisfactory results and are more difficult to keep in confinement than almost any other serpent). Small glazed ferneries are sometimes used as reptile-cases; but, as I remarked in the last chapter, it is impossible to combine snakes and botany, except it be in one or two peculiar instances, hardly likely to come within the scope of amateurs; while if the fernery be utilised exclusively as a reptilium, it will combine the maximum of expense with the minimum of convenience to be expected in such an apparatus. The objection applies equally to the dome-shaped structures which replace the lower sashes of windows, and the oblong, pyramidal-topped articles adapted to stand upon a table or decorate a green-house; to purchase an aquarium for the purpose is simply throwing away money. Here is a model which I can strongly recommend for cheapness and efficiency.

Suppose an ordinary four-legged table to be turned upside down. Let the top (or rather its under surface), now resting upon the floor, represent the bottom of the cage—the only solid part about it. Ridiculous as this method of illustration may appear, you had better make use of it when giving your instructions to a carpenter; for no matter how skilful a draughtsman you may be, you will find it very hard to combat all his preconceived notions of architectural propriety, and to impress his understanding with the kind of thing you want by a plan; but a cribbage-board with long pegs may be tried. To revert to our inverted table—lay four bars of wood upon the

extremities of the upturned legs, so as to complete the frame; imagine one of the two long sides to be glass, and the other, the top, and the two ends to be covered with canvas or wire-gauze; and there you have, roughly sketched, the sort of receptacle which I have found to answer excellently in every climate for the snakes proper to it.

Both floor and frame ought, of course, to be made of good, seasoned wood; the former should be riddled with plenty of small gimlet-holes and be supported on two or three battens, about an inch in thickness, if it is intended to stand upon a solid surface, to meet the possible requirement of drainage. Wood is to be preferred to metal for this cage, since it is warmer in its contact with the snakes, while no extra heat holds out an inducement to insect pests to take up their abode in it, as in the two former constructions. The frame must be stout enough to carry the glass and nails, but does not call for any great strength beyond this: the lower part should rise about an inch or an inch and a half above the level of the floor all round, to keep in the gravel. The uprights, and indeed every part, ought to be plain and square, without turning or ornamentation of any kind; if anything of the sort exists on the inside, it must necessarily leave chinks and spaces which will harbour dirt and tempt the snakes to explore. Window-glass will probably be employed for the glazed side (it is quite strong enough) instead of plate; and, to avoid the dangers attendant upon unduly large panes, an additional upright support must be allowed to every twenty inches, or two feet, of the length of the cage. A corresponding pillar to match this should be erected on the opposite side, and the two joined across the top by a transverse beam, like the ends, as the canvas or gauze will also require extra supports to maintain its tension, in proportion to its length. It will be observed that I say nothing as to the dimensions, because they depend upon precisely the same circumstances that were cited before, and the same rules of comparison with the size and number of the creatures for which it is destined to hold good. Having thus completed the floor and front (the glass side), the back and top will not take long to finish, since they merely require to be filled in with stout canvas, such as meat-safes are made of, or with wire gauze which is used for similar purposes. Of the two, I must say that I infinitely prefer the former. It admits more light, is

equally permeable by air while it excludes dust more effectually, does not corrode or become clogged, is far less expensive, and can be easily renewed at any time—though, as far as I can see, it is practically as durable as the wire. Moreover, the snakes do their mouths no harm in pressing against it, as they would be apt to do with the other material. I have had some in constant use for five or six years, and find it in as good condition, with regard to utility, as it was when first nailed on; nor has it stretched or slackened to any appreciable extent. It can be washed, and even scrubbed; but all that will be necessary, as a rule, is an occasional dusting with a clothes-brush, within and without. It ought to be supported, in a cage of very large dimensions, at intervals of half a yard or two feet, like the glass,—nailed, that is to say, not merely drawn over an intervening beam,—otherwise it may lose its tension. And take particular care that it is fastened as near to the edge of the woodwork as possible, so that no interval is left for the inmates to wriggle their heads or bodies into; where a piece of canvas passes across any part of the framework, upright or horizontal, it should be nailed firmly to *both* margins of the support, the two squares thus becoming practically separate pieces, independent of each other. The extreme obnoxiousness of any interval of non-adherence between the woodwork and canvas is very soon apparent when any such exists at the lower border; no matter how tightly the stuff may be stretched, the gravel will become wedged there by the persevering efforts of the serpents, and will be next to impossible to dislodge without injury to the canvas. Fix it close to the edge, then, and do not spare the tacks—three to the inch will not be an extravagant allowance.

If these items of advice seem tediously minute, I would invite the reader to notice that none of them are unimportant. His object in building a cage is to keep live snakes therein, and it would be vexatious to find that object frustrated by their escape or injury through the want of a tin-tack in the right place when all is finished. I wish to spare him the annoyance of finding these things out for himself by experiences which can only be untoward. A serpent-cage is not a recognised article of commerce. One cannot order it to be made, like a dog-kennel, without any further directions about details than its size; nor send to an ironmonger's or a fancy-shop and get a new one if it

does not answer, as one might for a canary. The importance of all these small matters has been revealed to me by a series of disasters for lack of them.

We have still the two ends to fill in. For these, two frames should be made of the exact size as the ends themselves, covered with canvas like the back and roof, and fastened with hinges to the top so as to form doors, lying against the exterior and lifting up from below. (It is hardly necessary to say that the canvas everywhere lies *outside* the frame). If these hinges are properly contrived, the doors may be turned up till they rest by the upper surface of their frame on that of the cage, and will stand in that position without support, which will be found an immense convenience during any manipulation in the interior. There must be a button, bolt, or ring and staple fastening at each corner below. Where the length of the cage does not exceed two feet, one door will be sufficient, the other end being simply covered with canvas; where the breadth exceeds three feet, there had better be a division in the middle of each end, and the door occupy only the half which is nearer the glass. No tray will be required, since the facilities for cleansing the gravel are so great. A sliding panel, to divide the interior into two compartments, is very easily contrived, if circumstances render it advisable.

Such a cage stands at a window of the house in which I write. It is 3 feet 6 inches long, 2 feet 6 inches broad, and 2 feet 6 inches high, the glazed side containing two panes. A well-branched "tree" springs from the floor, near the glass at one end, and slopes upwards to the farther angle at the top of the other. The frame and floor are made of white deal, the former being stained and varnished on the outside in imitation of satin-wood; and the whole, complete, cost £1. I cannot give its exact weight, but when furnished with gravel and pan of water I can just lift it without assistance from the small table on which it stands and carry it to any part of the room. In this cage are five snakes—European and North American Colubers, of hardy species; the largest four feet in length, the others being about three feet, two feet and a quarter, twenty-one inches, and eighteen inches, respectively. The glass side looks towards the centre of the room, of course, and the canvas back is close against the window. The cage itself is almost as light as if it were glazed on every side; while, since only the one layer of

translucent canvas intervenes between the window and the apartment, the latter is not darkened by its presence as much as it would be by an ordinary bed-chamber muslin blind. This window opens upon the road, and though the eyes of passers-by cannot penetrate the white canvas wall (a *very* important point in boy-infested neighbourhoods !), everything that goes on outside is visible from the interior, while every movement of the reptiles can be observed at leisure from any part of the room.

If it be intended to introduce hot-water tins into this kind of cage in the winter, a felt or quilted cover, such as was spoken of in the last chapter, must be made to go over it. It is ill adapted for such an arrangement, however; and I infer that those who make use of it will either remove their snakes to another situation in cold weather. or allow them to go into a state of hybernation with the appurtenances to be afterwards described.

(To be continued.)

NOTES AND QUERIES.

The Fauna of Higham, Kent.—In a little volume, entitled “A Handbook of Higham; or, the Curiosities of a Country Parish” (1882), for a copy of which we are indebted to the author, the Rev. C. H. Fielding, M.A., we find a chapter headed “Natural History,” followed by lists of the animals and plants found in the district. Judging by the length of these lists, the author appears to have paid more attention to botany than zoology, although, as he tells us, “considering the great centre of population in which the parish of Higham is situated (between the Thames and the Medway), and the amount of cleared land in the parish, the fauna is very extensive.” Amongst the few interesting mammals noticed are the Badger, which has been “frequently found,” the Harvest Mouse, and the Horseshoe Bat, concerning which we should have been glad to see something more than the bare mention of the name. The Polecat is doubtfully included in the list, and although the parish lies between two rivers, the Otter is said to be unknown there. In the list of birds, wherein 88 species are named without any intimation of their being resident or migratory, rare or common, we observe Montagu’s Harrier placed on equal footing with the Barn Owl and Sparrow Hawk, as if it were equally abundant, and we are left to guess what particular species (out of the half-dozen or so which are found in the British Islands) may be intended by the vague expression “Wild Goose.” Amongst the Amphibia the only species

calling for remark is the Natterjack Toad, which has once been procured in the parish. Higham, it appears, "can boast of few fish except those which, swimming in the Thames, are caught by Gravesend fishermen," and the author, who refers very briefly indeed to the local Crustacea, has nothing to tell us about the Land and Freshwater Mollusca, of which we should have supposed that the adjacent marshes would have yielded some interesting forms.

Yorkshire Lepidoptera.—All who are interested in the working out of the geographical distribution of animals will be prepared to welcome the list of Yorkshire Lepidoptera which Mr. Geo. T. Porritt, F.L.S., of Huddersfield, has been preparing at the instance of the Yorkshire Naturalists' Union, in whose 'Transactions' it will shortly appear, being now in the printer's hands. Assistance having been given by Yorkshire collectors, and full attention paid to the extensive bibliography of the subject, Mr. Porritt has written what is probably the best county-list of Lepidoptera in existence. It includes 1344 out of the 2031 known British species, or a proportion of about two-thirds.

MAMMALIA.

Food of the Hedgehog.—I am able to corroborate the statement of your correspondent (p. 25) as to the sucking of eggs by the Hedgehog. One I kept in my garden for some time last summer contrived to get into the hen-house, in which one of the hens was sitting on thirteen eggs, which disappeared one by one until three only were left. The hen then forsook them, and a day or two afterwards I found the Hedgehog in the nest-box, half buried in the straw, and two or three of the remaining eggs broken.—C. YOUNG (Llandaff).

Otters and the Floods.—The extreme wariness of the Otter and its nocturnal habits have probably often caused it to escape notice, or at least to be looked upon as a rare animal in many districts where it is not really uncommon. But here, at any rate, I think I have good reason to regard it as scarce, for till last October I had not for years heard of any Otter having been killed near this town, either by the hounds or otherwise, and though I have been constantly, and at all hours, on the banks of the Waveney, I have found very few traces of the presence of this animal. The fact, therefore, that during the last few months several Otters have been observed in the river, or the dykes connected with it, is I think worth noting. Like the rest of the county, we have suffered all through the autumn and winter from the excessive rainfall, and all our low-lying meadows have been repeatedly inundated. These high floods must have driven many Otters from their river-bank securities, and this may account for their unusual appearance in the open river. The thick and muddy

condition of the water, too, for weeks together has, I suppose, made it difficult for them to procure their usual food, and being pressed by hunger they have lost a good deal of their natural shyness. Besides others seen I have, I am sorry to say, the following notes of animals killed:—In the beginning of October an Otter was taken in a dyke at Mendham, in Suffolk. A man gathering bullaces in a cottage-garden by which the dyke runs heard a great uproar among some ducks feeding in the water, and looking up saw them fluttering in a body up the dyke closely pursued by the Otter. Before the animal could make its escape the man disabled and then killed it with a few blows on the head from a pole. This happened at a frequented spot, and only a few feet from the high road. I did not see this Otter, but was told it was a young one, not full grown, miserably thin, and out of condition. About the same time three others were seen together, early one morning, at Needham, in Norfolk, a little higher up the river, by a man out with his gun. Two of these he shot, and his dog brought them out of the stream. The third, which he said was a larger animal, fortunately got away unhurt. They measured in length 31 in. and 29 in. (or exclusive of the tail $21\frac{1}{2}$ in. and 20 in.) respectively. Again, on January 4th, and very near the same place, but in Weybread, on the Suffolk side of the river, a whole family of these animals was sacrificed. An old Otter and three young ones were discovered in a ditch connected with the river. The mother was shot, and the young ones killed by a dog. The latter were lying under a large heap of flags and weeds; they were apparently only a few days old, being quite blind, and so must have been born in mid-winter. The destruction in such a way of seven Otters in a few months, and in one short stretch of river, is greatly to be regretted. The Waveney here is well stocked with coarse fish, a few of which might well be spared for the Otters by our anglers, who generally have good sport.—C. CANDLER (Harleston, Norfolk).

Hairy-armed Bat in Co. Fermanagh.—It is as well to record in the pages of the 'Zoologist' the occurrence of the Hairy-armed Bat, *Scotophilus leisleri*, at Crum Castle, Co. Fermanagh. In June last year I found this Bat in great numbers in the roof of the boat-house there. It is far commoner in Ireland than was once supposed. See 'Zoologist,' 1874, pp. 4071, 4236; and 1875, pp. 4419, 4532.—RICHARD M. BARRINGTON (Fassaroe, Bray).

BIRDS.

The Meaning of English Bird Names.—Referring to Mr. H. T. Wharton's article on this subject (Zool. 1882, p. 441), I may remark that "Hern" and "Erne" are obviously the same word, and from the earliest times there has been an association in language between the two classes of birds, viz., Herons and Eagles, though perhaps the latter class, and especially with reference to Egypt, should also include Hawks. On the

principle that $l = r$, we can trace a connexion between the various names for "eagle," such as *aquila* (Lat.), *aigle* (French), etc., and the various names for the heron tribe in which a guttural letter appears, viz., *hiegro* (old High German for *heron*), *egret*, etc. The initial aspirate is of course of little philological value, while the guttural g or q in the centre of a word is probably of not much greater consequence in a question of roots. Thus on the one hand we have two sub-classes of names, apparently derived from a common root, where the letter r denotes the heron tribe, and the letter l the eagle tribe; on the other hand we have the two tribes of *eagle* and *heron* meeting in the old English *hern* and *erne*. It would be very interesting to many ornithologists if Mr. Wharton would try to trace the connexion in language between the eagles and the hawks; at any rate I can inform him that the old spelling of *hawk* was *haulk*, just as the Latin name for the marine *auks* is *alca*. The marine "auks" are probably so called from the analogy of their hooked beaks and wise-looking heads to those of the "hawks" on shore. Mr. Wharton is quite right to point out that the Saxon form of *hawk* was *havoc*, which is simply *hawk* with an o interpolated between the two last letters. But having done so, is it not most remarkable that he does not see the plain fact that *avocetta* is nothing more than Italian for "little havoc" = "little hawk or auk"? *Avis casta*, or "chastely coloured bird," is too far-fetched; the *avocet* is merely "the little hook-billed bird," with the hook turned up instead of down. [With regard to the derivation of the name *avocet*, there is yet another suggestion to be made, namely, that the word (a diminutive) may be derived from *avoco*, *avocare*, to call out, bearing in mind the noisy cry of this bird, and the fact that it was once provincially called "barker" and "yelper" in days of yore when it used to breed here, and was well known to the fen-men.—ED.] If we go further, and besides admitting l and r to be transmutable also adopt the method of transposition, it becomes very probable that the words in which the liquid precedes the guttural, as in *alca*, *haulk*, *falco*, &c., are from the same root as the words in which the guttural precedes the liquid, such as *aquila*, *eagle*, *egret*, &c. The terminal n and ante-terminal o in words like *hiegro*, *heron*, *falcon*, &c., probably derive their origin from mere euphony—also I think it will be admitted that initial aspirates, or intermediate gutturals which are a sort of rough "breathings," make no difference to the root which appears to rest on the liquids l and r for its pivot. *Hiegro*, deprived of its guttural, appears to indicate a connexion between the herons and the hawks or falcons, e.g., *hierax* (Gr.) *gier-eagle* and *jer-falcon* (Engl). My only real doubt is whether the words beginning with a sibilant s are from the same root. In Greek we have *hieros* = sacred, *hierax* = hawk. In Latin we have *sacer* = holy or sacred, and the falcon has always been called *sacer*, *saker*, or *sakr* in the language of European and Arabic falconers. Substituting l for r , and

leaving out the initial *s* (as the French do before *p* and *t*, e.g., *épine* for *spina*, *étude* for *studium*), is it reasonable to suppose that *aquila* = *falco sacer* and the Arabic *sakr*? Is it possible that in the religion of old Egypt the idea of sacredness may have been named from the hawk, and not the hawk from the idea of sacredness? We know that the moustached hawk, either lanner or kestrel, or both, was sacred. But Mr. Massey thinks the *purple heron* was also revered as the *phœnix* or purple bird. Is it possible that here we have the key to the immemorial connexion between hawk and heron, eaglet and egret? With regard to the suggested derivation of "bustard" from *avis* "*tarda*," if that be correct, how does Mr. Wharton derive custard, gustard, and mustard? My own theory is that bustard, buzzard, bittern (= büttern) are all one and the same word, and mean "the yellow-brown bird." *Buteo* = buzzard in Latin, and *butio* = bittern. Butter = yellow milk. With bittern compare the French "*bistre*." On this theory "butter-bump" would mean "the yellow booming bird," and the Devonshire men, who called bustards "turkey-buzzards," would deserve the thanks of philologists. On no other hypothesis but colour can I account for the similarity in name between *buteo* and *butio*, the buzzard and the bittern.—CLIFTON.

Dipper singing during severe Frost.—I am able to corroborate what Mr. Mathew has said (p. 79) on this subject. On the 13th December last the thermometer was said to have registered twenty-six degrees of frost in this country. A bitter north wind was blowing over a country covered with frozen snow. Rooks and other birds had that mute look of despair they assume in severe frosts. I was walking along a trout-stream named the Finisk with my gun, and a Dipper had flown on before me. At 3.45 p.m., the sun having just set, I approached a bend in the river, when I was amazed to hear a bird warbling sweetly near me. I paused and the song went on; not a loud song, but very sweet. I drew closer to the bend, when from the bank near me up flew the Dipper I had been listening to, and flew back over my head up-stream, uttering its Stonechat-like warning-note. On the 22nd December the Rev. W. W. Flemyng wrote to me, "I heard the Dipper singing to-day, in Curraghmore, a very sweet melody." Doubtless this species finds no difficulty in obtaining its prey, molluscs, &c., beneath the running water of brooks when the ground is frozen like a stone, and other birds are starving, so that it alone is cheerful under such circumstances. I took a Dipper's nest containing five eggs, on the 8th April last, that was placed on the iron shelf formed by a flange of the girder of the railway-bridge over the above-named Finisk River. This shelf, with the nest on it, faced inwards beneath the bridge and overhung the water. The bird, which was hatching, continued to sit though I drummed with a stick on the iron girder behind her, and only left the nest when approached with a ladder. A second

nest was subsequently formed last spring in the same position. Another had been constructed two years before on a flange of the same bridge, but that first nest was within reach of the bank, and was destroyed.—R. J. USSHER (Cappagh, Co. Waterford).

Siskins breeding in Confinement.—It may interest some of your readers to know that during the past summer I succeeded in getting my two pairs of Siskins (which I keep in large cages) to lay, and one of them to rear young ones as well. Although I have kept Siskins for several years, I never succeeded in inducing them to breed before. I am, however, aware that there are many instances of these birds laying when kept in confinement, but I only know of one where the young were hatched and reared. The first pair repaired a nest and laid two eggs on the 7th June; the hen then began to sit, but I took the eggs away shortly after, expecting she would build again and lay the full complement of eggs. She did not, however, do so. The second pair relined a nest in the same manner as the other, but did not lay until July 17th. Four eggs were laid and three young ones hatched in eleven days. The young when first hatched were covered with black down, but after the first week grew rapidly, and at the end of a fortnight were able to leave the nest. They were fed by the hen bird on the pupæ of gentles, hard egg, and the seeds of various composite plants. All lived to be a month old, when one died. The survivors are both cocks, lively healthy birds (one of them acquired a black chin by the 26th November) and resemble the wild bird in all particulars, except that the legs were always light-coloured.—C. YOUNG (Llandaff).

[Some interesting remarks on the breeding of the Siskin in confinement, by Mr. John Young, will be found in 'The Zoologist' for 1880, p. 61.—ED.]

The Birds of Lancashire.—I have for some years been working at the 'Birds of Lancashire,' and am anxious to make the list as complete as possible. The value of local lists of birds is generally recognized; and I need not, therefore, apologise for attempting to bring together in a collected form, up to the present date, the ornithological knowledge of my native county. Lancashire ornithologists, though numerous and intelligent, have, unfortunately, seldom published their observations; and the quantity of material ready to hand is much smaller than is possessed by other counties. Thus, to make the work complete, it is the more necessary to have full information from those acquainted with every district. If any of your correspondents are able to assist me, I shall be pleased to furnish them, on application, with the particulars on which I desire information.—F. S. MITCHELL (Clithero, Lancashire).

Rare Birds at Harwich.—A Gray Phalarope was shot on the 3rd November last whilst swimming in the harbour, and another was seen. A Little Bustard was seen on the 21st November. It frequented the large

fields of Ramsey and Little Oakley for more than a week, and escaped the many attempts made to shoot it. A large flight of Shore Larks arrived on this part of the coast, and frequented the salt marshes. No less than thirty-five were shot. A single specimen of the Waxwing was seen on the 13th December in a garden at Dovercourt.—F. KERRY (Harwich).

Bonaparte's Gull at St. Leonards-on-Sea.—About the month of July, 1876, I was looking through an interesting collection of birds belonging to Mr. F. Pershouse, of Torquay. Amongst other specimens I particularly noticed a small Gull, which I could not then identify. However, I luckily took some notes of it. A month or two ago I got an American skin of Bonaparte's Gull, *Larus philadelphia*, from Mr. Marsden, the dealer, at Gloucester. This skin at once put me in mind of Mr. Pershouse's bird, and on referring to my notes of that specimen I found they agreed very closely with the skin which I had received. As Mr. Pershouse was lately making some alterations in his cases, he very kindly took the bird out and sent it up to me for identification, and on comparing it with the skin above mentioned and with another which Mr. Howard Saunders had kindly sent me, I found it to be without doubt *Larus philadelphia*, in immature plumage, and in the same state of plumage as the centre bird in Yarrell's figure. Nor can there be any doubt about its being a British-killed specimen, for Mr. Pershouse shot it himself. The following is his account of its capture:—"It is some years since I shot it, and I cannot supply the exact date, but it was early in November, 1870, at St. Leonards-on-Sea, at the western extremity of the parade. It was with a number of Black-headed and Kittiwake Gulls. I mistook it at the time for *Larus minutus*, and remained under that impression until your visit." It is a young bird, with some of the dark markings on the wing which probably led to its being mistaken for an immature Little Gull. For an adult Little Gull, with its white primaries, it could never have been mistaken. It is by no means a common Gull in the British Islands. Mr. Harting, in his 'Handbook,' enumerates only six British specimens; and Mr. Rodd, in his 'Birds of Cornwall,' mentions one other Cornish specimen besides the one referred to in the 'Handbook,' but beyond these I have not been able to find another recorded instance of a British-killed example. Mr. Pershouse's specimen, therefore, is only the eighth reported. It may be well, perhaps, to point out some of the distinctions between Bonaparte's Gull and the immature of *Larus ridibundus* and *Larus minutus*. It is intermediate in size between the two, but the markings of the primary quills will serve better to distinguish it than comparative size and measurements, however accurately taken, as most gulls vary a little in size. Bonaparte's Gull has the shaft of the first primary black, or nearly black, except a small portion towards the tip where the white on the inner web runs up to the shaft. This may vary a little, as the skin sent to me by Mr. Saunders seems a very light

one, and has the shafts of the primaries paler than either my American skin or Mr. Pershouse's specimen, but still the shaft is by no means white as in *Larus ridibundus*, and besides this there is on the inner web of the first primary of Bonaparte's Gull a black streak, on the inner web next to the shaft, the outer part of the web being white, the white only running up to the shaft at one part about half an inch from the tip; the tip itself is black. In *Larus ridibundus* this order of things is reversed, the inner web being white next the shaft, with a small streak of black outside the white. This is equally applicable to the second and third quills, and will at once distinguish this bird from *Larus ridibundus*. From the immature Little Gull the primaries may also serve to distinguish it. There is no white on the shaft of the first three primaries of the Little Gull, the shafts being black to the tips, nor does the white on the inner web anywhere extend to the shaft. In the Little Gull also there is no white on the outer web of the fourth and fifth primaries, as there is in *Larus philadelphia*, the white being very visible even in the closed wing: these distinctions, many of which are pointed out in Mr. Howard Saunders's paper on the *Larina* in the 'Proceedings of the Zoological Society' (1876, p. 206), and the figures of the first three primaries of *Larus ridibundus* and *Larus philadelphia* there given, and which are apparent in the specimens of all three birds now before me, will, I think, be sufficient to help anyone into whose hands a specimen of Bonaparte's Gull may fail to recognize it at once, and to distinguish it from either of the commoner British Gulls for which it may be mistaken.—CECIL SMITH (Bishops Lydeard, Taunton).

Sooty Shearwater at Bridlington.—In December, 1882, an example of this widely-distributed Shearwater, so long confused with the Greater Shearwater, as a visitor to our shores, was presented to the Oxford Museum by the Rev. E. Elton, of Wheatley Vicarage, Oxon, at the suggestion of Professor Westwood. Mr. Elton informs me that this example of *Puffinus griseus* was shot by his nephew, the late Mr. John Elton, in Bridlington Bay in 1872. The fishermen there called it "the black Shearwater." This appellation seems analagous to that of "Black Hagdon," by which, according to Mr. Dresser ('Birds of Europe'), it is known in the Bay of Fundy. [It is also called Hagdown in the South of Ireland, *see* Thompson vol. iii., p. 408.] So far as records in 'The Zoologist' go, this Shearwater, now at Oxford, is the last obtained on the British coast; at least I have failed to find any (but the old, Irish) reference to the species, since three were obtained in September, 1866, also at Bridlington, as recorded by Mr. W. Boulton (Zool., 1867, p. 543); at the time these birds were supposed to be immature Great Shearwaters. Messrs. Clarke and Roebuck include *Puffinus griseus* in their list of the Vertebrates of Yorkshire (p. 85) as a "casual visitant, of rare occurrence in the winter." But the first British example, apparently, on record, was obtained by Mr. G. Marwood, jun., at

Teesmouth, in August, 1828, so that it would appear to be as much an autumn as a winter visitor.—HUGH A. MACPHERSON (3, St. James Road, Carlisle).

Honey Buzzard caught at Sea.—On the 25th November last I received from Great Yarmouth a live Honey Buzzard, which had been caught two days previously on board a ship at sea, upon which it had settled, tired out probably on its migration to our shores. It appeared to be in good health, and showed no sign of fear or wildness in its captivity. I gave it meat, liver, "lights," and the heads of chicken and pheasant, which for the first week or ten days it ate freely, so that I hoped to be able to keep it alive. Its appetite, however, seemed to fall off, and, though tempted with rats, mice, birds, and a worm, it refused to eat, and on the morning of December 19th I found it dead. Mr. W. Lowne, of Great Yarmouth, to whom I sent it for preservation, found the liver affected, part of it being as black as ink. The plumage was a uniform dark rich brown, the legs, toes, and base of the beak a bright yellow, the iris a greyish hazel. The bird frequently raised the narrow-pointed feathers at the back of the head, which formed a crest, a peculiarity I do not find mentioned by Yarrell. When approached it often made a noise in its throat somewhat resembling that made by a hen.—HUGH TURNER (Ipswich).

Birds of the Banbury District.—Under this title the Banbury Natural History Society has recently published in pamphlet form (pp. 28) a list, by Messrs. Aplin, of the birds which have been procured or observed within a radius of six miles of the head-quarters of the Society. The district consists for the most part of land in a high state of cultivation, small fields with thick hedgerows, fairly well timbered; but, although it lacks the wild character of some more favoured localities, it embraces such features as Tadmarton and Wigginton Heaths, the valley of the Cherwell, with its numerous tributaries so attractive to aquatic species, and Clattercutt Reservoir, where the Great Crested Grebe breeds. The list comprises 180 species, of which the most noteworthy have been already at various times reported on by Messrs. Aplin in the pages of 'The Zoologist.'

Hobby in the Co. Tipperary.—As the Hobby is a rare bird in Ireland (see 'Zoologist,' 1877, p. 471), it may be worth while to communicate the following note which I received from Mr. W. Corbet, of Green Hall, Rathcorrack, whose passion for falconry and for keeping various birds and animals in confinement is well known in this country. He writes:—"I shot a wild Hobby and saw another some years ago. I have had trained ones which I got from Castang, of Leadenhall Market, London, and could not be mistaken as to the species. I have been practising falconry for fifty years, and have had all the hawks used in falconry—the Greenland, Iceland, Saker, Lanner, Peregrine, Hobby, Merlin, Goshawk, and Sparrow

Hawk—and I ought, therefore, to “know a hawk from a heronshaw.” The Hobby is larger than the Merlin; the points of his wings reach to the tip of his tail, and he flies higher.” In reply to my request for further particulars of the one shot by him in Ireland, I have received a fuller communication from him, dated the 11th December last, in which he states:—“It is now about twelve years ago since I shot the Hobby in the Co. Tipperary, near Bird Hill. It was a male bird in mature plumage. I skinned it, but a cat got at the skin and spoiled it. I think it was towards the end of September I shot it.” Six instances of the occurrence of the Hobby in Ireland have been noticed by the Editor in ‘The Zoologist’ for 1877, p. 471. The above instance mentioned by Mr. Corbet makes a seventh.—R. J. USSHER (Cappagh, Co. Waterford).

The Note of the Manx Shearwater.—In justice to Mr. H. Chichester Hart, whose communication on this subject appeared in the last number (p. 81), it may be stated that after it had been printed, and before it was published, he wrote to correct his impression that the Manx Shearwater was “a silent bird, in consequence of his finding no allusion to its note in the books.” A correction to that effect, however, had already been supplied in the editorial note to a much fuller extent, and it was too late to make further alteration.—ED.

Interbreeding of Blackbird and Thrush.—I have for several years been occupied in collecting all the recorded cases of apparent interbreeding between Blackbirds and Thrushes. I have now got notes of between twenty and thirty such instances, which I am putting together for the purpose of examination, and I shall feel obliged to any ornithologists who will direct my attention to any obscure instances which are likely to have escaped my notice.—ROBT. MILLER CHRISTY (Saffron Walden).

Hobby breeding in South Lincolnshire.—Mr. Seebohm, in his new work on ‘British Birds,’ mentions this falcon as breeding annually in North and Mid Lincolnshire, on the authority of Mr. John Cordeaux, thus leaving out the southern part of that county. Several times to my own knowledge it has bred there, and last year a pair took possession of a deserted Crow’s nest in a wood, but before any eggs were laid one of the birds was shot. However, another mate was found in a day or two, and before again being molested three eggs had been laid, when the female bird unfortunately fell to the keeper’s gun.—J. CULLINGFORD (University Museum, Durham).

Singular Accident to a Robin.—I was driving one day on the road, when I caught sight of a Robin by the edge of the grass struggling a little and presenting an unusually odd appearance. On getting down in order to look at it, I found the mouth wide open, and no sign of the lower mandible, which, on closer examination, I found to be completely imbedded

beneath the skin of the neck and along the sternum. With great care I managed to disengage the bill, and although the bird seemed nearly dead from strangulation, I laid it down in a safe place, hoping it might recover by the time I came back. I returned to the spot in a couple of hours, when I found the bird had disappeared, probably not much the worse for its singular misadventure. No doubt it had been busy preening itself when its sharp beak happened to transfix the skin, and of course during its efforts to withdraw it the beak only penetrated further and further under the skin.—FREDERICK LONG (Wells next the Sea, Norfolk).

Varieties of the Wheatear and Siskin.—From the description given (Zool. 1882, p. 352) of the variety of the Wheatear shot in Kirkcudbrightshire, I would suggest that it may be merely a young bird in a certain state of plumage, for it corresponds almost exactly with one which I shot some time ago, and which was, I think, certainly a young bird changing its first feathers for the winter plumage. My father has a variety of the male Siskin which curiously resembles that recorded at p. 368, as having "a white instead of a black cap to its head," his bird having the cap almost entirely yellow.—J. H. GURNEY, JUN. (Northrepps, Norwich).

Building Sites of House Martin.—As Mr. Young has noted (p. 34) instances of the House Martin building in cliffs, I may mention the two communities of this species which I can remember for over thirty years nesting among the sandstone cliffs of Ardmore, on the coast of this county. In both cases the nests are clustered beneath lofty arches of rock overhanging the sea, positions evidently chosen as being inaccessible except on wings. One of these breeding places is at a considerable distance from the other. No Martins build under the eaves of houses in that neighbourhood. Ardmore is one of the many localities mentioned by Thompson (pp. 390-1) where Martins breed in precipices on the Irish coast.—R. J. USSHER (Cappagh, Co. Waterford).

Wildfowl at Poole.—I have received a female specimen of the Great Northern Diver, in mature winter plumage, weighing $8\frac{1}{2}$ pounds. Its stomach contained the remains of some small fishes. I have also received three Shoveller Ducks, an adult male and female and an immature male; and two female Red-breasted Mergansers. All these birds were shot by a punter on the 18th November in Poole Harbour.—C. A. MARRIOTT (Lewisham, Kent).

Late Breeding of Swallows and Martins in Kirkcudbrightshire.—I noticed two Swallows flying about Edenbank, the residence of Provost Lennox, near Maxwelltown, for more than a fortnight after the others had gone south. At my request Mr. James Lennox made an examination on October 18th of the nests under the porch, where these two pairs had

already brought out at least one brood of young each. Mr. Lennox found that in one nest there were eggs just on the point of hatching, and the other nest looked as if it had been only a few hours vacated by a young brood. The old Swallows were not seen after the evening of the 17th October. On the 19th and 20th October a Swift was seen flying along the streets and over the houses of Maxwelltown. On the 20th October I saw beneath the eaves at Lochanhead Railway Station, about five miles west of Maxwelltown, a brood of four Martins that would probably be ready to leave the nest on the following day. The parents were busily catching for them the "midges" that swarmed along the roadsides during the sunny blinks betwixt the very heavy showers that had continued during the whole day. The dates for each of these three species are later than I have ever previously noted, and it is to me the more remarkable since the great body of the Swallow tribe left us last season a few days earlier than usual. The many cold, wet, and blustering days last autumn may account for this earlier departure, but there were frequent warm, though dull, days, on which Dipterous and other small insects were abundant in the air, and these may have enabled the individuals I saw to prolong their stay, which was plainly attributable to causes that affected individuals only.—ROBERT SERVICE (Maxwelltown, Kirkcudbrightshire).

Great Grey Shrike in Suffolk.—I had a fine adult specimen of this bird brought to me by Mr. J. A. Smith, of Akenham Rise Hill, near Ipswich. It was shot on December 2nd, and is believed to be the only specimen killed here for many years past.—J. E. TAYLOR (The Museum, Ipswich).

Great Grey Shrike near Cockermouth.—I had the good fortune to have given me a Great Grey Shrike, shot by Frazer, head-keeper to Mr. L. F. B. Dykes, of Dovenby Hall, on the 11th December last. Though very badly shot, I succeeded in skinning it, and have got a fair specimen. It is a bird rarely shot in this neighbourhood.—GEORGE MAWSON (Cockermouth).

Curious Site for Sparrow's Nests.—At Hove, on the western side of Brighton, are some large gas-holders. Round the circumference of these huge cylinders small wheels are attached, with broad flat spokes, which pass up and down against the upright supports of the holders, so that when the holders are filled, they rise to a considerable height, and when they are nearly exhausted of gas they fall almost to the trough of water surrounding the base of the cylinders. The Sparrows in the neighbourhood often build their nests between the nave and rim of these wheels, supported by the broad spokes, and have sometimes even hatched their young, notwithstanding the fact that the nest and its contents must slowly revolve, so that at each half-revolution what was the top of the nest becomes the bottom, and the sitting bird must have accommodated itself to the altered position

by gradually shifting the eggs. I am informed by the engineer of the works that, as the nests cause obstructions in the wheels, they are usually removed before the young are fledged.—J. JENNER WEIR (6, Haddo Villas, Blackbeath).

Ornithological Notes from the Isle of Wight.—On October 3rd, 1882, a Thick-knee Plover was picked up on Bembridge Down. A Red-necked Phalarope, $7\frac{1}{2}$ inches in length, was received by Mr. Smith, the taxidermist at Newport, on October 29th, the first he had seen or heard of in the island, after twenty-one years' experience there. The Grey Phalarope has been a frequent autumnal visitor to our shores of late years. In the northern part of the kingdom the Red-necked species appears to be more frequently met with than the Grey, which had only once come under Macgillivray's observation in winter, whereas the former is said to be "much more numerous." There is no accounting for the great increase of the number of Phalaropes visiting us in the autumn; either the species must be much more numerous or the migratory line of flight changed.—H. W. HADFIELD (High Cliff, Ventnor).

Wren building in deserted Nest of Martin.—A pair of Wrens built last year (1882) in the deserted nest of a Martin, *Hirundo urbica*. The latter was sixteen feet two inches from the ground, with an eastern aspect.—H. J. J. BRYDGES (Boullibrooke, Presteign).

[A curious and unusual situation.—ED.]

Occurrence of the American Kestrel in Yorkshire.—A female example of *Falco sparverius* was shot by a gamekeeper near Helmsley, Yorkshire, in May, 1882. I first saw the bird with Mr. C. Helstrip, bird-stuffer, St. Saviour's Place, York, on the 14th November last, and have since bought it, being perfectly convinced as to its authenticity. I have seen for myself both where the shooter stood and where the bird fell. I am informed by my friend Mr. Robert Taylor, of Harome, near Helmsley, who skinned my specimen, that a pair were killed, but that only one was found. They were shot in a small copse of deciduous trees, and the nature of the undergrowth was such that "marking them down" was made completely out of the question, falling as they did in different directions. I have shown the bird to Mr. Seebohm, and he confirms my opinion as to the species. It agrees very well with a specimen in his collection. The total length is only $9\frac{3}{4}$ inches. The red marks upon the head, which are characteristic of the bird, are well defined, and also the dark regular bars extending across both wings and back, and on the tail. On November 30th I went again to Harome, and was told that the skeleton of the second bird had been found. The specimen is, I believe, the only one on record as having been taken in Europe. It has no appearance whatever of ever having been in confinement. the feathers being remarkably perfect.—J. BACKHOUSE, JUN. (York).

The Mealy Redpoll in Norway.—As the Rev. H. H. Slater mentions (p. 11) that he only once satisfactorily identified the Mealy Redpoll, it is perhaps noteworthy that late in July, 1878, this species was very plentiful at Hjerkins and other stations on the Dovre. The young birds were very familiar: I frequently observed them perching upon palings close to and sometimes on the roof of the stations. They appeared to be feeding on grass-seeds.—H. A. MACPHERSON (Carlisle).

Nocturnal Movements of the Coot.—While staying at Stackpole Court, Pembrokeshire, on the 23rd January last (a bright moonlight night, with a light wind from S.E., time 12.45 a.m.), I observed from my window, about ninety feet from the water below, a large black object, about twenty feet long and six feet broad, moving through the water at the rate of about two or three miles an hour in various directions; there was a good deal of splashing about the tail and sides of the object. I called Lord Kensington's attention to it; it had the appearance of some large fish,—a shark or something of that sort,—and, as we could not make out what it was, we went down to the water's edge to investigate, and found it was a mass of Bald Coots, which dispersed on seeing and hearing us. Looking down from the window above there was no interval perceptible between the birds, who were in one solid black mass. After returning to the house we watched them for half an hour from the window; they all crowded together again, and continued their gyrations about the water in different directions, both up and down wind.—H. W. CAMPBELL (44, Charles Street, Berkeley Square).

Late Stay of Swift in South Wales.—Swifts should be gone before October, but I saw one here repeatedly in that month and even later, always in the same place, close to the Cathedral. The following are the dates of which I made notes of having seen it:—Oct. 25th and 26th; the 30th, a cold and cloudy day; again on Nov. 2nd (stormy, with heavy showers); and lastly, Nov. 10th (bright and clear, but cold). I was unable to look for it between Nov. 2nd and 10th.—H. ROGERS (Llandaff).

Hybrid between Greenfinch and Linnet.—A year or two ago I placed in the western aviary of the Zoological Gardens a female example of this hybrid, which, for aught I know to the contrary, may still be living there. Another was netted near Reading a few years since, and passed into the possession of my correspondent, Mr. S. Salter, jun., who recently informed me that it exhibited the rosy or carmine breast of the male Linnet in breeding plumage.—H. A. MACPHERSON (Carlisle).

Great Snipe in Nottinghamshire.—A Solitary Snipe was shot on October 3rd at Hickling in this county; it was in good plumage and weighed eight ounces and a half. This is only its second occurrence in Nottinghamshire.—J. WHITAKER (Rainworth).

Migration of the Jay.—Referring to the notes which have already appeared on this subject (pp. 1, 27, 76, 77), I may remark that the Jay has certainly been more plentiful than usual with us during the past autumn and winter. I have several times seen upwards of a dozen together; this is in a part of the district where they hardly ever breed, but where a few may generally be noticed from October to March.—OLIVER V. APLIN.

Assumption of Male Plumage by a Female Wild Duck.—A Wild Duck, which was hatched and brought up in a domesticated state in the parish of Northrepps in the year 1854, lived till February, 1883, when it died, after having been for some months quite blind. For the last eight years of its life, or thereabouts, this Duck has exhibited a complete drake's plumage, with the exception of a sprinkling of brown intermixed with the green male plumage on the sides of the head and neck, and also with the exception of a very few brown feathers of the female type scattered on the flanks.—J. H. GURNEY (Northrepps Hall, Norwich).

Moorhen in a Rabbit's Earth.—Whilst ferreting on Feb. 3rd a Moorhen (*Gallinula chloropus*) came out of a rabbit's hole. Not having heard of a similar circumstance, I inform you of the fact.—DARELL STEPHENS (Mapperton, Beaminster, Dorset).

[Doubtless the bird was suddenly surprised, and no other place of concealment was at hand. We have more than once seen a Moorhen attempt to creep into the hole of a Water Rat, which proved too small for it, and have also seen a winged Red-legged Partridge take refuge in a Rabbit's-burrow.—ED.]

Uncommon Birds near York.—The following uncommon birds have recently been obtained in the neighbourhood of York, and are now in the hands of Mr. E. Allen, of Feasegate, in this city, for preservation, where I have had the opportunity of seeing them. A Waxwing, shot at Acaster; a Peregrine Falcon, killed near Escrick; a Grey Plover, obtained near Cottingwith; a Greenshank (*Totanus glottis*), shot at Sheriff Hutton; a Turnstone, killed on Eldwick Moor out of a flock of seven; a White-fronted Goose, obtained at Cottingwith; a Great Grey Shrike, shot at Kiplingcotes; a Little Auk, from near Harrogate; an American Bittern (*Botaurus lentiginosus*), shot at Welbury; and a Common Bittern (*Botaurus stellaris*), killed near Hull. Besides these I saw a curious rufous variety of *Phasianus colchicus*, and a pied variety of the Blackbird.—C. D. WOLSTENHOLME (York).

Grey Phalarope in North Oxon.—On the 22nd December last I examined an adult specimen of the Grey Phalarope (*Phalaropus fulicarius*), which a boatman had that morning picked up by the canal-side about a mile north of this town.—OLIVER V. APLIN (Banbury, Oxon).

Waxwing in South Lincolnshire.—On the 13th Dec. a nice specimen of this bird was shot on the coast of Lincolnshire, and sent to me. There are six wax-tips on each wing. The bird was in good condition, and had been feeding upon the berries of the mountain-ash. — J. CULLINGFORD (University Museum, Durham).

Eider Duck in Nottinghamshire.—A female Eider Duck was shot on November 16th in the meadows near Nottingham, where it was no doubt attracted by the large floods, many acres there being under water. This is the first time it has been obtained in this county, and makes the Nottinghamshire list to number 240 species, which, considering it is an inland county, is a large number.—J. WHITAKER (Rainworth).

Missel Thrush and Chaffinch nesting in proximity.—A Chaffinch built in an apple tree in my garden last May on one side of a walk, on the other side of which was a Missel Thrush's nest in another apple tree. This corroborates the observations of Mr. Christy mentioned at pp. 31 and 32.—R. J. USSHER (Cappagh, Co. Waterford).

REPTILES.

Smooth Snake in Surrey.—Mr. Axford, in 'The Zoologist' for February, in commenting on my discovery of *Coronella lavis* at Chobham Ridges (not "Bridges," as erroneously printed), suggests that it was either injured, or a tame one. I am quite sure it was uninjured, and think in such a locality it is most improbable that it was a tame one. I am more inclined to think that the chilliness of the evening—it was just about sunset—may have made it sleepy.—HENRY N. RIDLEY (Natural History Museum, South Kensington).

BATRACHIANS.

Habits of the Edible Frog.—Apropos of Mr. Rope's accurate account of the habits of this species (p. 49), I quote a brief extract from my journal, under date Sept. 15th, 1881:—"Found to-day, in about three inches of stagnant water, some fine tadpoles of *R. esculenta*, nearly as large as fully-developed frogs; they had for the most part only the posterior legs protruded. They are very expert in avoiding capture, darting away for a little distance, and then assuming a position of apparent repose. When thus at rest the colour of these tadpoles serves admirably for protective purposes, it being by no means easy to detect the ugly little monsters upon a muddy brown surface. After leaving the water, the young *R. esculenta* wanders to a considerable distance from that element; should it be alarmed, however, in the immediate neighbourhood of water, it generally makes for the water like its elders." I may mention that the colour of these little frogs is of a colour approxi-

mating closely to that of a dry field; whilst the usual green dress of the adults, though varying from a very light shade to a very dark one, serves also, as Mr. Rope suggests, to protect the patriarchs of the pool amid the herbage they love. But a favourite "mizpeh" is a defunct cat or dog, when the harmony of colour is less obvious. I have found the colour of *Bombinator igneus* approximate closely to that of the muddy ditches in which it revels. As to Mr. Rope not having found the Edible Frog in running brooks, it was certainly plentiful in the stream (or canal) which passed through the Villeneuve Marshes, where I made the above jottings. I found the best way of catching mature examples was to walk down the stream, "marking" each Frog as he sprang into the water. Invariably the Frog swam out towards the middle, but always turned back without crossing, and hid its head in the mud of the near bank. When the Frog had thus hidden its head like the ostrich of history, it was easy to capture it with a quick "grab" of the hand. In this way I caught a baker's dozen very quickly, after having spent a whole day in trying to take them with a net.—HUGH A. MACPHERSON (Carlisle).

The Natterjack Toad at Carlisle.—I am much interested by Mr. Rope's account of the colony of Natterjacks at Coldfair Green. My friend Mr. H. Holton, jun., tells me that he obtained a fine adult of *Bufo calamitosa* at King Moor, near Carlisle, in August, 1882. It would be well to ascertain whether the partiality to the sea (which, as Mr. Rope reminds us, is well exemplified by Bell's long-established locality on the shores of Solway) can be attributed to the distribution of any favourite food of the Natterjack. I shall try to renew my acquaintance with this species on the Solway this spring.—H. A. MACPHERSON.

FISHES.

The Salmon Disease.—In certain rivers the Salmon are affected by an epidemic disease, which manifests itself in white patches upon the fish where there are no scales. As the fungus grows a sore forms, which may extend to the bone. According to Professor Huxley, the fungus is a *Suprolegnea*, probably *S. ferax*, but of this there is no proof. The zoöspores from this fungus were never observed ciliated and motile; but they are exceedingly minute, and become rapidly disseminated. They are produced in great numbers—a single fly infected with the fungus may bear 1000 fruiting hyphæ, which in one day may produce 40,000 zoöspores. The hyphæ seem not only to traverse the epidermis of the fish, but also to bore through the superficial layers of the derma. The epidermis is entirely destroyed. The only method of preventing the spread of this fungus among Salmon is to remove every infected fish from the stream, though it may not be worth while to adopt this method in practice. Although seawater kills the fungus when it comes in contact with it, if the latter has

penetrated the derma the fish may go to the sea and recover from its attack, but on returning to fresh water the disease may break out again from the hyphæ in the derma.

ARCHÆOLOGY.

Fishing with Trained Cormorants, temp. Charles I.—Pennant, in his account of the Cormorant ('British Zoology,' 1812, vol. ii., p. 283), says: "These birds have been trained to fish like falcons to fowl. White-lock tells us that he had a cast of them manned like Hawks, and which would come to hand. He took much pleasure in them, and relates that the best he had was one presented to him by Mr. Wood, Master of the Cormorants to Charles I." It is presumed that the "Whitlock" here referred to was Sir Bulstrode Whitlocke, the author of "Memorials of English Affairs from the beginning of the reign of King Charles the First to the happy restoration of King Charles the Second," but I have been unable to find in this work any such statement as that quoted by Pennant, either in the original edition, which has no index, or in the modern edition, in four volumes, published at Oxford in 1853, wherein the index on this point affords no assistance. There was a curious little volume published in 1654 (12mo., pp. 568), entitled "Zootomia; or, observations on the present manners of the English," by Richard Whitlock; and it occurred to me that possibly this might be the author cited by Pennant. But having with some trouble procured a sight of the book, I found it to contain nothing but satirical discourses on morals and manners, in which few readers at the present day would take the slightest interest. Being still curious to trace Pennant's quotation to its original source, in the hope of finding further information on the subject to which it relates, I should be much obliged to any one who, having found it, would furnish me with the exact reference.—J. E. HARTING.

A Whale in the Thames in 1658.—The following notice appeared in the 'Mercurius Politicus,' June 3rd to June 10th, 1658:—"Whitehall, June 2nd. This evening came hither divers seamen and watermen to give an account of their having taken a Whale in the Thames not far from Greenwich. It is strange that this kind of monster should quit the sea to come up a river, and advance beyond the salt water so far into the fresh. He hath lain upon the shore these three days at Greenwich Town's end, a spectacle to many thousands of people that have flocked thither to behold him. He is none of the bigger sort, being supposed but young, yet about sixty feet long, and carrieth a very great bulk in the other dimensions."

[This was probably a Rorqual or Fin Whale.—ED.]

Sperm Whales on the Kentish Coast in 1762.—An old newspaper of May 17th, 1762, states that "the spermaceti and blubber of the four

Whales which were ashore at Burchington and Broadstairs were sold last Wednesday for £374 18s., and that at Deal for £149, which was much more than was expected."

Former Occurrence of the Great Bustard in Yorkshire.—'The Sporting Magazine' for October, 1792, states that "within these few days a Bustard was killed at Rudstone-on-the-Wolds by a gamekeeper belonging to Sir Griffith Boynton. The width of the wings was seven feet over."

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

January 18, 1883.—Sir JOHN LUBBOCK, Bart., F.R.S., President, in the chair.

The following gentlemen were balloted for and severally elected Fellows of the Society:—Edward A. L. Batters, A. J. Burrows, Edgar F. Cooper. Prof. J. A. Harker, and George Lewis.

There was exhibited, on behalf of Mr. James Romanés, a live specimen of *Pieris rapæ*, which had been found fluttering on the window of his house a few days previously. Mr. Stainton remarked that this early appearance of the insect in question might be accounted for by the fact that the eggs were often hatched on the flowers of *Tropæolum* within doors, and hence the imago would issue sooner than in out-door specimens.

Mr. A. G. Bourne offered some remarks on the anatomy of *Polynoina*, pointing out that *Polynöe Grubiana* (very common in the Mediterranean) is only a variety of *P. clava*, Montague, of our own coasts, which has certain constant characteristics and others more variable.

Prof. P. M. Duncan read his "Observations on the Madreporé Corals, Fam. Fungidæ, with special reference to the hard structures." The family Fungidæ of Dana was further elaborated by MM. Milne Edwards and Jules Haime in their 'Hist. Nat. des Coralliaires.' They described the synapticula as constituting an essential family structure, and also the absence of endothecal dissepiments. In Dr. Duncan's communication he describes the ridge of the continuous synapticula with canals between them limited by solid and also perforate septa, and delineates the structures; the synapticula are shown to have no relation to the ornamentation on the ridges of the septa. The basal wall is stated to be of synapticular origin, and the foramina in it to relate to the growth of these binding structures. The anatomy of species of *Fungia*, *Herpolitha*, and *Holomitra*, Dana, is given, and it is shown that it is the last genus what the author considers to include *Podolacia*, Eclatt; the synapticula begin to be divided and dis-

continuous, leading to the condition seen in the Anabaciaceæ and Lophoserinæ. The microscopic value of the septa and synaptacula is considered, and these last structures are shown to be produced in some instances before the thin septum, which very well unites to the larger one; while the synaptacular structures are not always continuous with those of the larger septa. The direction of the ultimate histological elements of the two structures differs, and there is connective tissue between them.

February 1, 1883.—Sir JOHN LUBBOCK, Bart., F.R.S., President, in the chair.

Messrs. F. W. Burbridge and Joseph Johnson were balloted for and elected Fellows of the Society.

Dr. W. C. Ondaatje called attention to a Red Coral from Ceylon.

A paper was read by F. Maule Campbell "On the pairing of a Spider, *Tegenaria guyonii*, and description of certain sexual organs in the male." Some of the habits of spiders, and especially of this species, were mentioned as bearing on the conflicts of the sexes which were described, and the specific benefits which would arise from them referred to. The paper concluded by a note on certain glands (probably of spinning function) situated on the convexity of the abdominal sexual region. The ducts, considerably convoluted, open through transparent tubular spines, arranged transversely to the axis of the body of the spider. Two papilla-like processes below the opening of the genital sinus were described.—J. MURIE

ZOOLOGICAL SOCIETY OF LONDON.

February 6, 1883.—Prof. W. H. FLOWER, I.L.D., F.R.S., President, in the chair.

The Secretary made a report on the additions that had been made to the Society's Menagerie during the month of January, and called attention to examples of two species of Passerine Birds from Japan (*Turdus cardis* and *Parus varius*) new to the collection.

A letter was read from Mr. F. C. Selous, dated from the Matabele Country, on the possibility of obtaining a White Rhinoceros.

Extracts were read from a letter received from the Rev. G. H. R. Fisk, of Cape Town, giving an account of the habits of some Reptiles which he had had in captivity.

A communication was read from Messrs. Salvin and Godman, containing the description of a new species of Pigeon of the genus *Otidiphaps* from Ferguson Island, one of the D'Entrecasteaux group, which they proposed to call *O. insularis*.

Mr. Sclater read some further notes on *Tragelaphus gratus*, and exhibited drawings of both sexes of this Antelope, taken from specimens living in the Menagerie of the Jardin des Plantes, Paris.

A communication was read from Mr. E. W. White, containing some supplementary notes to a former paper on the birds of the Argentine Republic.

A communication was read from the Rev. G. A. Shaw, containing some notes on the habits of an Aye-Aye which he had had in confinement for several months, and other information respecting this animal.

Mr. G. A. Boulenger read a paper containing the description of a new species of Lizard of the genus *Enyalius* from Peru, which he proposed to name *E. palpebralis*.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

Cassell's Natural History. Edited by Professor MARTIN DUNCAN, F.R.S. In six volumes, 4to, with numerous illustrations. London: Cassell, Petter, Galpin & Co. 1878—1883.

We have been too long accustomed to find in zoological text-books a long string of quotations from various authors of an older generation, ill-assorted, uncondensed, and unverified, and containing not unfrequently a variety of statements which may have been perfectly true in a sense at the time they were written, but which very inaccurately represent the views of modern scientists. It is time that such text-books as these were superseded, and we are glad to see the attempt which has been made by Prof. Duncan in the volumes before us to furnish students of Zoology with something more accurate, more comprehensive, and more philosophical than they have yet been able to obtain in the way of a text-book.

Although the attempt has frequently been made, no individual author has succeeded in producing unaided a satisfactory general work on Natural History, it being virtually impossible for any one man to be thoroughly conversant with every branch of so large a subject. The merit of the present publication lies in the fact that, under the guidance of a competent editor, the work has been divided among specialists, each of whom has made a particular study of the class of Vertebrates, or Invertebrates, as the case may be, on which he has undertaken to write. The reader, therefore, may reasonably infer that the information afforded him in each department of the work is, if not thoroughly

exhaustive, at least thoroughly reliable, so far as it goes; and this is what is wanted at the present day.

We will not pretend to say, as regards the Vertebrata, that the various classes have been so well treated of as not to stand in need here and there of improvement, for we have noted several cases in which fuller information would be desirable, and some rearrangement necessary to ensure greater accuracy and simplicity.

In the case of the Invertebrata, for want of a sufficient knowledge of many of the groups, we hesitate to express an opinion; but the names of the writers, as it seems to us, furnish a sufficient guarantee of the accuracy of their work.

The contents of the volumes may be thus briefly stated:—

Vol. I.—Apes and Monkeys, by Dr. Duncan; Lemurs, by Dr. Murie; Bats and Insectivorous Mammals, by Mr. Dallas.

Vol. II.—Land Carnivora, by Prof. Parker; Aquatic Carnivora, Cetacea, and Sirenia, by Dr. Murie; Elephants and Conies, by Prof. Boyd Dawkins and Mr. Oakley; Ungulata, or Hoofed Animals, by the two last-named and Prof. Garrod.

Vol. III.—Ruminants, by Prof. Garrod; Rodents, by Mr. Dallas; Edentata (Sloths, Anteaters, and Armadilloes) and Marsupials, by Dr. Duncan; Birds (the Accipitres and Picariæ), by Mr. Sharpe.

Vol. IV.—Birds (the remaining Orders), by Mr. Sharpe; Reptiles and Amphibians, by Dr. Duncan.

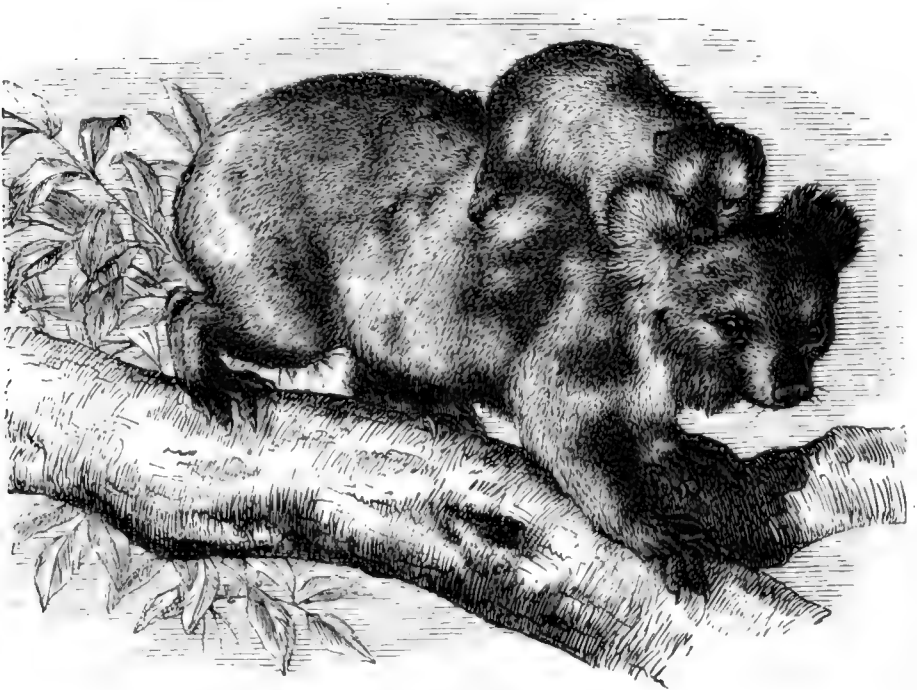
Vol. V.—Fishes, by Prof. Seeley; Mollusca and Tunicata, by Dr. Woodward; Molluscoidea, by Miss Crane; Coleoptera, by Mr. Bates; Hymenoptera, by Mr. Dallas.

Vol. VI.—The remaining Orders of Insects, by Mr. Dallas; Myriopoda and Arachnida, by Mr. Dallas; Crustacea, by Dr. Woodward; Vermes, Zoophyta, and Infusoria, by Dr. Duncan; Echinodermata, by Mr. P. H. Carpenter; Spongiæ, by Prof. Sollas; Rhizopoda, by Prof. Rupert Jones.

It would be, of course, impossible in the limited space at our disposal to give anything like an adequate review of each volume, the contents of which are here indicated; but it will be seen from the above array of names that the Editor of the work has spared no pains to make it as complete and accurate as possible by securing the co-operation of those who are well qualified to write on the subjects allotted to them.

This, as we have said, is a characteristic feature in the present work. Another feature is the way in which the Editor deals with the subject of classification. Nine authors out of ten

in taking up any branch of Zoology or Botany, almost invariably commence by giving their ideas of classification, and having laid down a scheme to their satisfaction, proceed to deal *seriatim* with the species under review, in the order which this classification indicates. There can be no doubt that this method affords an aid to memory—the key to the classification furnishing, as it were, a route map to the unknown country which has to be explored. Dr. Duncan, however, takes a different view. He says, in effect, “If you want to puzzle a beginner, set before him a scheme of classification (bristling with scientific names) which



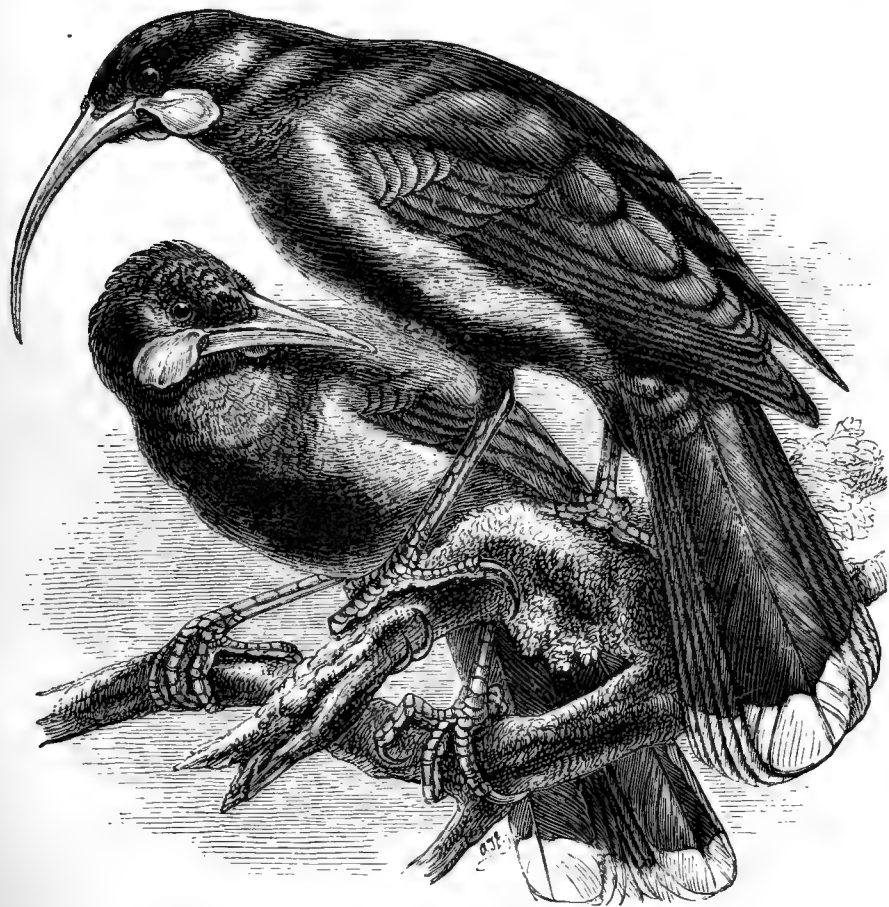
THE KOALA, OR NATIVE BEAR OF AUSTRALIA,
Phascolarctus cinereus.

he cannot understand, for he has learnt nothing of the relationships of the various orders, families, and genera, and which he cannot remember for the same reason.” His advice to a student, in a word, is “Get hold of your facts first, and learn to group them afterwards.”

This doctrine is carried out in the present work, and so pleasantly is the lesson imparted that the reader experiences no feeling of being bored by technicalities, and at the same time acquires, as he proceeds, a considerable amount of information.

Each volume is illustrated, but, we think, somewhat too profusely; for the illustrations are not all of equal merit, and many of them are certainly not good enough to be retained either as works of art, or as accurate delineations of the objects they are intended to represent. In a future edition a judicious weeding out of the less satisfactory ones would make room for desirable additions to the text, and thereby enhance the value of the work.

Through the kindness of the publishers we are enabled



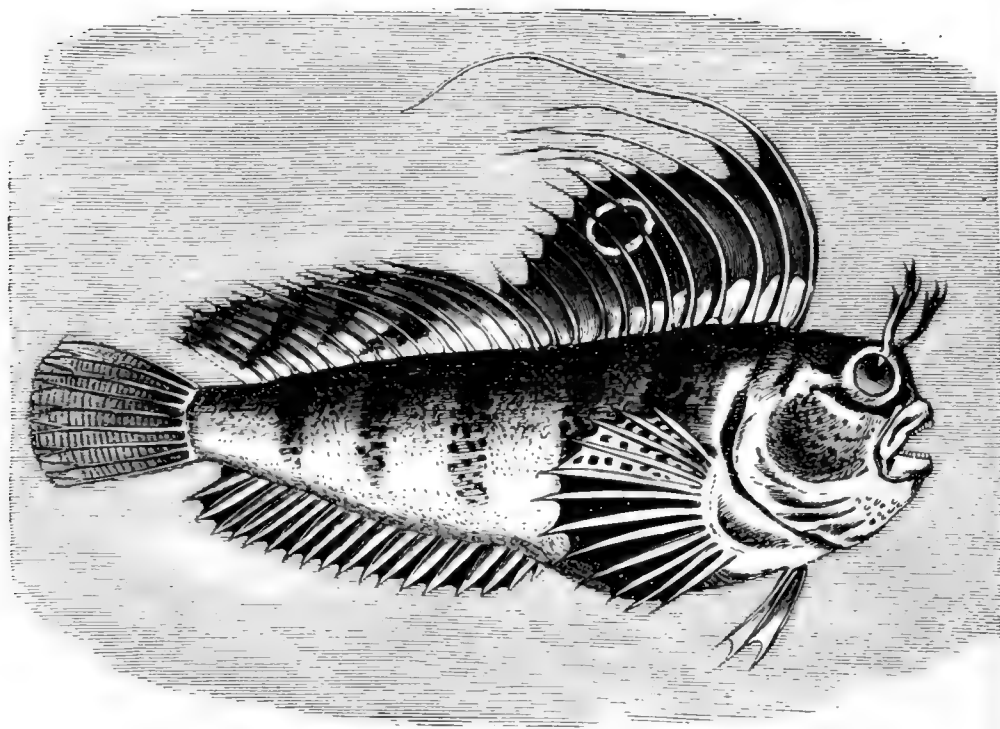
THE NEW ZEALAND HUIA, *Heteralocha acutirostris*.

to reproduce here the illustrations which are given of a few remarkable species, namely:—

1. The Koala, or Native Bear of Australia, *Phascolarctus cinereus*, a specimen of which lived for some time in the Regent's Park Zoological Gardens, feeding on the leaves of the blue gum-tree, especially procured for it. It is one of the *Phalangistidæ*, a family of the Marsupials, or pouched animals, arboreal in its

habits, and descending at night from the trees to prowl about in search of succulent roots, which it scratches up; but it derives its chief sustenance from the leaves and tender shoots of the blue gum, of which it appears to be very fond.

2. The New Zealand Huia, or Wood Crow, *Heteralocha acutirostris*, is chiefly remarkable for the difference which is observable in the bills of the sexes, a peculiarity which, according to the observations of ornithologists in New Zealand, is not without its use. They frequent decayed trees which are infested with the



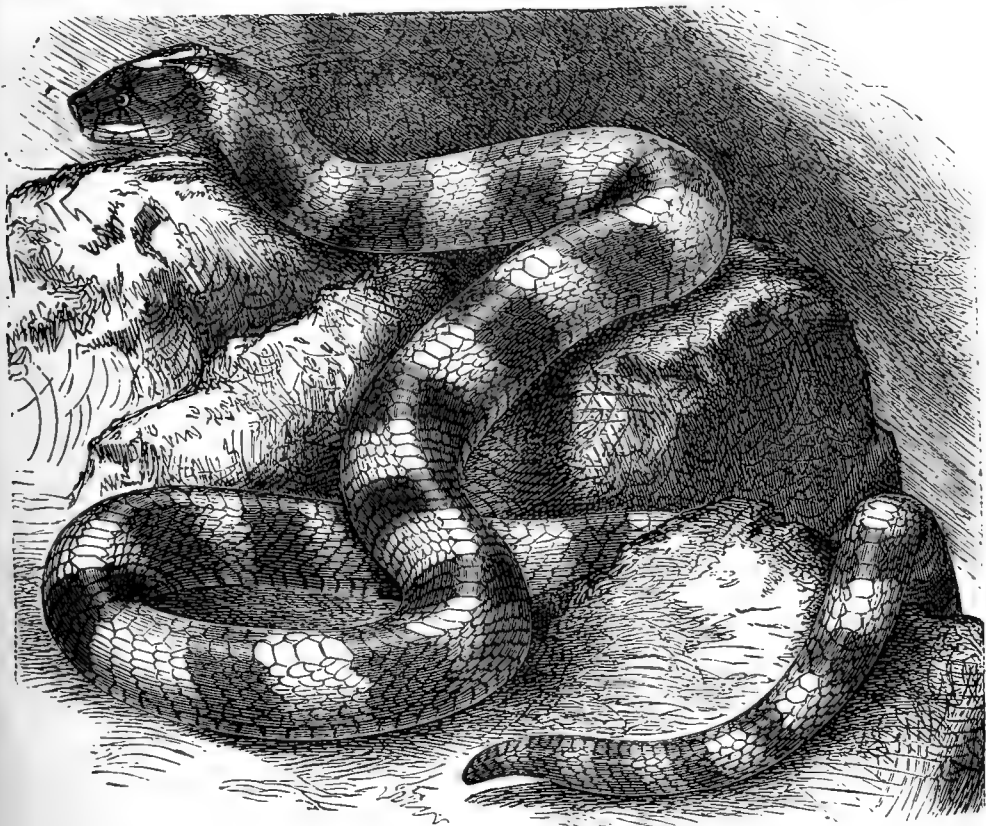
THE BUTTERFLY BLENNY, *Blennius ocellaris*.

hu-hu grub (the larva of a large nocturnal beetle, *Prionoplus reticularis*), and the different development of the mandibles in the two sexes enables them to perform separate offices. The male, with his shorter and more conical bill, attacks the decayed portions of the wood, chiselling out his prey after the manner of some Woodpeckers, while the female, with her long pliant bill, probes the other cells, where the hardness of the surrounding parts resists the chisel of her mate.

3. The Butterfly Blenny, or Sea Butterfly, *Blennius ocellaris*, remarkable for its peculiar and bright colours, is not uncommon

in the Mediterranean, and was first noticed as a British species by Montagu, who obtained specimens from an oyster-bed at Torcross on the Devonshire coast. He observed that those in which the ocellated spot was most perfect had the first dorsal ray very long. Since his day it has been met with more frequently on our coasts. Mr. Cornish reports that it is not uncommon near Falmouth, but elsewhere on the Cornish coast rare.

4. The Bungarum Pamah, *Bungarus fasciatus*, is a very venomous snake between three and four feet in length, which is



THE INDIAN BUNGARUM, *Bungarus fasciatus*.

found nearly all over India. It may be recognised at once by its peculiar markings being ringed alternately with steel-blue and bright yellow; by its triangular outline having a dorsal keel of hexagonal scales; and by the hard blunt end to the tail. It does not erect its head, but lies coiled up in curves, and when disturbed jerks itself out like a spring, but without extending its whole length of body. It is not so common as the Cobra, *Naja tripudians*, which sometimes reaches five feet or more in length,

and rarer than the Krait, or Gedi Paragoodoo, *Bungarus cæruleus* (see 'Zoologist' for February, p. 74), which have the under parts uniformly white, and the upper parts bluish or brownish black, uniform, or with very narrow white streaks, not quite as broad as a scale, and generally radiating from a white vertebral spot. These three are amongst the most deadly of venomous snakes.*

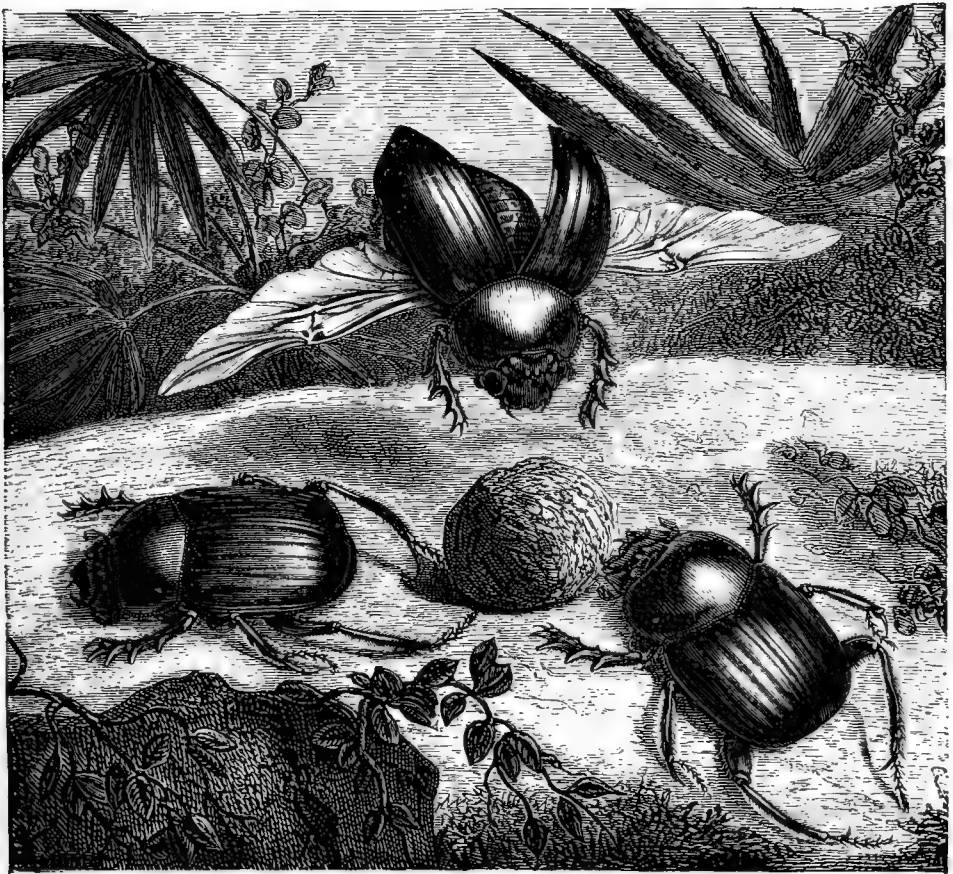


THE LEAF BUTTERFLY OF INDIA, *Kallima inachis*.

5. The Leaf Butterflies of the genus *Kallima* are amongst the most remarkable of the *Nymphalinae*, from the curious resemblance of the under surface of the insect to a dead leaf. The Indian species are nearly five inches in expanse of wing; the

* By the way, why does the writer of the section on the Reptilia in this work give the English name of the poisonous *Sepedon hamachates* as "Ring Hal's Slang" (*sic.*)? *Ring-hals Schlange* is merely the Dutch for Ring-necked Snake, bestowed on it by the Boers in South Africa.

upper surface of a bluish or purplish colour, with a transparent spot in the middle of the fore-wings; the under surface brown, with a dark streak resembling a midrib running from the tip of the fore-wings to the tail of the hind wings. The under surface is irregularly streaked and mottled, and Mr. A. R. Wallace describes the Sumatran *Kallima paralekta* as being invisible when at rest, from its resemblance to the dead leaves among which it always perches. It sits with its wings over its back, and its



THE SACRED BEETLE, *Scarabæus sacer*.

head and antennæ raised and hidden between them, while the tails of the hind wings rest upon the branch, corresponding exactly in appearance with the stalk of the leaf.

6. The Sacred Beetle, *Scarabæus sacer*, is one of about seventy species of a genus of Old World Beetles which have their metropolis in tropical Africa, and is remarkable as being that most frequently represented on Egyptian monuments.

Snakes ; Curiosities and Wonders of Serpent Life. By CATHERINE C. HOPLEY. 8vo, pp. 592. With illustrations. London : Griffith & Farren. 1883.

FOR a long time past there has been a gap—a something wanting—in ophiological literature, taken as a whole ; and no one has hitherto grappled with the task of supplying this one thing needful so courageously as Miss Hopley has done in the book before us. Between the standard authorities—huge tomes, which are often little more than statistical museum catalogues—and the absurd stories about snakes which appear from time to time in the columns of popular journals and magazines, a wide hiatus exists ; and, though several books have been cast into the chasm, it has never heretofore been bridged-over in the manner accomplished by ‘*Curiosities and Wonders of Serpent Life.*’ Although the writer has much original observation upon which to draw, founded upon a patient study of reptiles, both in this country and in America, she does not by any means disregard the experience of others. “*Audi alteram partem*” is obviously her motto where a disputed point is involved ; and what point is there connected with snakes which is *not* matter of dispute ? The industry herein indicated is most commendable. It would be difficult to mention any author or publication, general or special, having any bearing on the subject, that has not been hunted up for quotation. Turning to the index at the end of the volume, and selecting, for example, the letter B at hap-hazard, we find the following names among the references under that head:—Lord Bacon, Baird, Owen Baker, Sir Samuel Baker, Balfour, Bancroft, Sir Joseph Banks, the Bard of Avon, Bartlett, Barton, Bartram, Bates, Beal, Duke of Beaufort, Beaumont, Beauvoir, Bell, Ben Jonson, Berkeley, Beverley, Bibron, Bingley, Blake, Bond, Bonnat, Buffon, Bowerbank, Braden, Brittain, Broderip, Browne, Brunton, Buckland, and Bullen ; without including such as would come within British India, British Museum, Bridgewater Treatise, Brazil, Bulletins, &c.

Not content with simply describing snakes, Miss Hopley endeavours to find a use for everything ; to seek out the purposes which the creatures themselves serve in creation, as well as to discover the utility of the various component items in the economy of each individual. Thus we find the tongue, the

rattle, the hood, and even the horns and prolonged snouts of some species, not merely accepted as curious facts, but discussed intelligently from a physiological point of view. Concerning the first we are told:—

“For the most part nocturnal, winding their way under tangled masses of vegetation, often in dark caves, holes, crevices and obscure retreats, with their eyes so placed that they can see neither before nor under them, and with other senses only feebly developed; the tongue, with its sensitive papillæ, feels its way and conveys impressions to its owner. Cats have their whiskers to help them in the dark; moles and mice have their quick sense of smell to guide them; all nocturnal animals are gifted in some manner or another, but snakes have only their tongue.

“Much as an insect uses its exquisitely-constructed antennæ, so does a snake its long, slender, pliant, bifurcate, and highly-sensitive tongue. Ever busy, ever vigilant, exploring while barely touching each surface within reach, yet by night and by day conveying with that slight contact all necessary information to its owner. Sent out with the speed of a flash, it telegraphs back with like quickness the result of its discoveries.”

The writer betrays an obvious partiality for the *Crotalidæ*, some of the best chapters being devoted to that family, while the illustrations of the different rarities are noteworthy for their fidelity to Nature. An amusing account of a rattlesnake battue is quoted from Catlin. The sections devoted to the sea-snakes and serpent-worship are especially interesting, and under the heading “The Great Serpent” a vast amount of testimony and learned opinion in favour of, and adverse to, the existence of such a monster is adduced. Many little points, too, well worthy of attention, are noted. The possibility that rare and singular snakes, which have been classified in museums as the sole representatives of new varieties, species, or even genera, may be nothing more than hybrids, is inferred from a case of hybridisation which actually occurred in the reptilium at the Zoological Gardens, and is a consideration which may be extended far beyond the domain of ophiology. As practical, also, is the solution of the mystery which has puzzled many observers, who have found vegetable substances in the intestinal canal, *viz.*, that they were simply the contents of the stomach of some animal which has been swallowed by the snake, and dissolved away from them. We have seen grain from a pigeon’s crop rejected by a boa, and still retaining sufficient germinal vitality to grow when

planted. In all probability, the *Scolopendræ* found in the stomach of *Echis carinata* can be accounted for in a similar manner; and in any case a decided negative may be given to the hypothesis of Aristotle, mentioned in conjunction therewith (p. 579).

The illustrations, by Mr. A. T. Elwes, add much to the value of this work, and are original, both in conception and design. Especially to be commended are those which represent various anatomical details, either of the natural size or indefinitely-stated relative dimensions, and aid greatly in the study of the physiology of the different organs.

Since without a grumble or two criticism would be uncritical, one may take exception to certain curious plural forms of generic titles, as used to denote individuals,—*Bungari*, *Tropidonoti*, *Trigonocephali*, *Bucephali*, &c. The name of the genus is the standard of a regiment: there is but one, and it cannot be multiplied as a designation for Privates Brown, Jones, and Robinson. Again, it is somewhat surprising to find in a book on "Snakes" two whole chapters (by no means uninteresting in their way) devoted to slow-worms. True, they are brought in as a sort of theatrical contrast to the Anaconda, by virtue of their diminutive size; but seeing that *Anguis fragilis* sometimes attains a length of twenty-two inches, and is really a rather thick and bulky little reptile in proportion, it may be doubted whether some of the excessively lithe and slender whip- or tree-snakes would not have served the purpose better, preserving the ophiological unities at the same time. Some kinds of *Oxyrhopus* and *Liophis* are very small also, not to mention the rare *Stenorhina freminvillei* (*Microphis quinquelineatus* of Hallowell).

Lastly, in her desire to be strictly impartial and unbiassed, Miss Hopley occasionally admits evidence which appears to be insufficiently supported:—"A farmer," "a clergyman," and sundry anonymous "gentlemen" are quoted; and one "Charles Smith, who was ploughing near Chicago," also contributes his testimony. The species *Smith* is familiar to most of us, but the soul athirst after knowledge yearns for some further identification of the particular specimen. And the name of the gentleman, clergyman, ploughman, or whoever he was that furnished the tale of a tame boa-constrictor dying of grief because its master was unwell, ought surely to be handed down to posterity!

THE ZOOLOGIST.

THIRD SERIES

VOL. VII.]

APRIL, 1883.

[No. 76.

ON THE TIME OF DAY AT WHICH BIRDS LAY THEIR EGGS.

By ROBERT MILLER CHRISTY.

IN the year 1876 there was a brief discussion in 'The Zoologist' on the above subject. It was started by Mr. J. Cordeaux, who said (p. 4983) he had observed that after a Carrion Crow's first egg is laid the hen bird may always be found on the nest between the hours of 3 and 5 p.m. He had searched ornithological works for the purpose of learning at what hour out of the twenty-four birds usually deposit their eggs, but the only reference to the subject he had been able to find was a note by the late Dr. Saxby, who said (Zool. 1862, p. 8166):—"Careful observation on twenty different species of our Insectorial birds has enabled me to ascertain the fact that, as a general rule, they lay their eggs between the hours of 7 and 12 p.m."

Mr. F. Boyes, of Beverley, soon after (Zool. 1876, p. 5115) wrote that he thought 8 a.m. was nearer the time, and he suspected that by accident Dr. Saxby had written "p.m." instead of "a.m." A few pages later (p. 5161) Mr. S. H. Saxby, the brother of Dr. Saxby, says he has no doubt this surmise is correct, but he cannot discover the passage in the original MS. He had been told by a very accurate observer that among poultry and caged birds each successive egg is, as a rule, laid later in the morning than the previous one. Mr. C. M. Prior (Zool. 1877, p. 53) says that he believes the usual laying-time to be still earlier in the morning, although not in the middle of the

night. He was once interested in watching the nest of a Green Woodpecker. On three mornings he visited the nest at 5.15 a.m., when he always found another egg deposited. On the fourth morning he went at 4 a.m., when he found the bird on, but no fresh egg; it had, however, been laid by 5.30 as usual. He had always noticed, when out about six o'clock on spring mornings, that nests he had previously found contained another egg.

This short discussion seems to have satisfied the gentlemen who took part in it, although it left the matter in almost exactly the same unsatisfactory condition as before; but I had become a little interested in it, so I at once commenced to make a few observations, which I have carried on as opportunity offered until the present time, and which it is my intention to describe in this paper. I may remark that this subject would doubtless have been thoroughly worked out long ago had it not been for the fact that many more difficulties surround it than are at first sight apparent. In the first place, observations can only be carried on at one period of the year; it is necessary to live quite in the country or in a large garden where many birds build; the nests should next be found, and should be visited in the evening, and again by rights between four and five the next morning; a mid-day visit is also necessary, yet care must be taken not to disturb the bird or go too often; the nest, to afford opportunities for observation, must be not too far removed from one's house, and if each visit entails a stiff climb up a tree or a wade through mud and water the difficulties are not lessened.

These difficulties, then, must excuse the paucity of facts collected, although they show approximately the laying-times of about thirty different common inland birds. I have not thought it desirable to give the localities, but I may state that they were all in Essex, Yorkshire, or Sussex.

On May 14th, 1880, an English Partridge laid an egg between 7 a.m. and 6.30 p.m. Next day the bird was on the nest at one o'clock, and was, I believe, laying. A Moorhen, whose nest I found at 8 a.m. on July 2nd, 1877, had two eggs, but by 5 p.m. had three. No more were laid until 2 p.m. the next day, when some one took the eggs, so I substituted three stones, and the next day the bird laid another egg in the early part of the afternoon. The following day there was no egg laid, but the day after one

was deposited, I believe between 10 and 11 a.m. The next day there was no addition made, and after that I discontinued observing. It seems from this that the Moorhen lays every alternate day, and within an hour or two of mid-day. Another nest, which had three eggs at 8 a.m. on May 26th, 1880, had no more at 12, but another was deposited between that time and 8 p.m. Next day none were laid up to 6 p.m., but between that time and 6 the next morning another had been laid. Between 8 that evening and 6 the following morning another was laid; after that I breakfasted on the eggs!

I have enquired of two of our chicken-women as to the time Fowls lay, and have obtained from each exactly the same reply, although one was more precise than the other. According to them the first egg is laid early in the morning, but varies somewhat according to the time of year. Each successive egg after that is laid an hour or an hour and a half later than the previous one until the time comes to be about 1 o'clock, then a day is missed and laying in the early morning is again resumed. This agrees closely with what Mr. S. H. Saxby says. Ducks seldom lay but early in the morning.

I do not know what time of day the Kestrel lays, but it is stated in Dresser and Sharp's 'Birds of Europe' that one kept in confinement only laid every alternate day; and so, apparently, did one which I found with one egg on May 18th, 1877, as it had only three on the 23rd.

The Barn Owl is said to deposit its eggs in pairs at intervals of several days. I once saw a Missel Thrush on her nest, and I believe laying, at 10 a.m. Another bird, in 1877, had one egg at 7 a.m. and three on the evening of the next day, so that she must have laid some time during the day. I found two Black-birds' nests on April 15th, 1880, at 8 a.m.; at 12 one had another egg, but the other had not. Next day an egg was laid between 8 and 11.45 a.m. A nest in our garden had two eggs at 7 a.m. on April 25th last, and three at 12; next day the egg was laid by 10.15.

The first Thrush I watched was in 1877, and she laid between 7 a.m. and the evening. The next one laid between 6.45 a.m. and 2 o'clock; next day the same bird was on laying at 10 a.m., and the day after between 9 and 10 a.m. Another bird, in 1877, laid about 11 o'clock. Another laid between 1 p.m. and 7 a.m.

Up to 7 p.m. the next day no more were laid, but by 10 there was another. Another bird laid an egg after 12 in the day, and another between 7 a.m. and the evening. On the 22nd and 24th of March, 1879, a Thrush was on her nest laying at exactly 11.9 a.m., but at 10.45 on the 26th.

On June 22nd, 1877, a Spotted Flycatcher laid before 10 a.m., and on June 6th, 1881, another laid before 7 a.m. On July 3rd, 1877, a Sedge Warbler laid her first egg before 9 a.m., before 7.30 next day, and before 6.30 the day after. A Garden Warbler laid an egg before 7 a.m. on May 17th, 1880. On June 10th, 1879, a Wheatear laid its second egg before 11.30 a.m., the next egg between 5 that evening and 11.30 next morning, and the fourth egg before 6.45 the morning after. A Yellowhammer's nest which I watched had no fresh egg up to 10 a.m. on June 21st, 1877. A Sky Lark's nest which I found one evening in May, 1880, received no more eggs up to 2 p.m. the following day; but another nest, which I found in May last, had two eggs one evening and three by 5.15 the next morning, but no more up to 7 p.m. My friend Mr. J. B. Ellis, of Leicester, watched a Lark's nest, which received an egg between 3 and 5 p.m. on June 4th, 1879.

On May 7th, 1880, I discovered a Chiffchaff's nest, which had received an egg before 12 o'clock. Three other eggs in the same nest I ascertained to have been laid before 8, 6, and 6 a.m. respectively, and since the previous evening. On the same day a Willow Wren laid an egg before 6 a.m., but since the previous evening. Two Linnet's nests, which I watched on May 4th, 1881, each received an egg before 7 a.m., and the next day one of them had another before 6 a.m.—in each case since the previous evening. Mr. Ellis watched a good many Linnets in 1879, and they always laid before 7 a.m., though sometimes they missed a day. A Canary, whose nest I watched in May, 1878, laid in the morning before 7, but two eggs belonging to a second brood were deposited about 8.30 and 7.30 a.m. respectively.

A Chaffinch was watched in April, 1880, and laid before 7 a.m., but nothing more was added up to 6.30 p.m. A few days later two Chaffinch's nests received no eggs between 8 a.m. and 6 p.m., but both had another before 7 next morning. In 1882 a Chaffinch laid between 6.15 p.m. and 9 a.m., and between the

evening and 9 a.m. the next day. In 1880 I believe a Greenfinch laid about 7 a.m. In May, 1881, I had one under observation which laid between 7 p.m. and 5 a.m. At the end of April last another bird laid between the evening and 10 the next morning; at 10.15 a.m. on the 28th four birds had each laid an egg since the previous evening; a few days later two other birds laid between the evening and 9 the next morning.

A Sparrow, in 1877, laid before 8 a.m.; in 1880 one laid between 7 p.m. and 5.30 a.m.; in 1881 another laid between 7 p.m. and 5 a.m., but no more had been laid up to 11 o'clock the following night. A Wren which I watched laid an egg, I believe, during the night. On May 12th, 1881, I found a Creeper on her nest (which I was watching), and I believe laying, at 4.45 a.m. On April 19th last, at 5 a.m., there were two eggs in a Nuthatch's nest, but five at the same hour on the 22nd, so I conclude that the eggs were deposited before 5. Three Swallow's eggs, watched in 1879, were laid some time during the night, one before 6.45 and the other two before 9 a.m. In March, 1880, a Rook's nest contained two eggs at 5 p.m. I did not visit it next day, but the day after there were four at 10 a.m., and no more up to 5 p.m., so that probably one had been laid early that morning.

On September 14th, 1879, a Ring Dove's nest had one egg at 5 p.m., but two at 5.45 next morning. On March 21st, 1880, another nest had one egg at 3.30 p.m., but two at 8.45 next morning. On May 26th, 1880, I found a Ring Dove's nest with no eggs in the evening; by 6 a.m. there was one egg, but no more were laid up to 6 the following morning, although another was deposited during that day. At 7.30 a.m. on July 4th, 1877, there were two eggs in a Stock Dove's nest which had only contained one the previous evening. At the same time I found two eggs in a hole that had contained none on the 2nd. Another bird that had one egg at 3.15 p.m. one day, had no more at 7 next morning, but had perhaps forsaken. At 7 a.m. on May 26th, 1880, a Stock Dove had one egg, and no more up to 11.45 a.m. next day, but at 6 p.m. there were two. On June 11th, 1880, a Turtle Dove laid its first egg between 8 a.m. and 7 p.m. I have watched the tame Pigeons in our pigeon-house: one laid its second egg between 12 and 4, another between 11 a.m. one day and 10 the next, another between 9.45 and 4 p.m., while

another bird laid its first egg between the evening and 9.45 next morning.

These observations seem to show that the Pigeons all lay their eggs about the same time of day; the second egg being deposited at a different hour from the first—the latter early in the morning and the former early in the afternoon of the next day.

The observations further show, I think, that each species of bird has a special hour of the twenty-four at which it lays its egg, and that birds belonging to the same genus have often just about the same hour. Most of our small birds—warblers, finches, and the like—seem to deposit their eggs at some time in the early morning; the *Turdidæ* at about 10 or 11 in the forenoon, and some other species about mid-day.

Nevertheless these statements do not invariably hold good, as reference to the foregoing paragraphs will show. Sometimes birds are an hour or two later, or occasionally earlier, than their usual time, while sometimes they miss a day altogether. Cold also retards or prevents laying. Thus, in the middle of April, 1879, there came some very cold weather, with sharp frosts and snow several inches deep, and a Blackbird in our garden commenced to sit on two eggs. The snow pressed upon the nest and all but overturned it, but I put it back in position, and the old bird continued sitting, considerably to my astonishment.

Assuming that Dr. Saxby meant *a.m.* instead of *p.m.* his observations, above quoted, although they differ from mine, may be correct for the high northern locality in which they were presumably made, namely, Shetland.

I need not point out on how small a number of birds my observations have been made, nor how many genera there are on which I have not at present a single observation. I offer these few facts, however, such as they are, in the hope that they may be of use to others who may be glad to pursue the enquiry further.

A WAVE OF LIFE.*

BY W. H. HUDSON, C.M.Z.S.

FOR many years, while living in my own home on the Pampas, I kept a journal, in which all my daily observations on the habits of animals and kindred matters were carefully noted. Turning back to 1872-3, I find my jottings for that season contain a history of one of those waves of life—for I can think of no better name for the phenomenon in question—that are of such frequent occurrence in thinly-settled regions, though in countries like England, seen very rarely, and on a very limited scale. An exceptionally bounteous season, the accidental mitigation of a check, or other favourable circumstance, often causes an increase so sudden and inordinate of small prolific species, that when we actually witness it we are no longer surprised at the notion prevalent amongst the common people—that mice, frogs, crickets, &c., are occasionally rained down from the clouds.

In the summer of 1872-3 we had plenty of sunshine, with frequent showers; so that the hot months brought no dearth of wild flowers, as in most years. The abundance of flowers resulted in a wonderful increase of Humble Bees. I have never known them so plentiful before; in and about the plantation adjoining my house I found, during the season, no fewer than seventeen nests.

The season was also favourable for mice; that is, of course, favourable for the time being, unfavourable in the long run, since the short-lived, undue preponderance of a species is invariably followed by a long period of undue depression. These prolific little creatures were soon so abundant that the dogs subsisted almost exclusively on them; the fowls also, from incessantly pursuing and killing them, became quite rapacious in their manner; whilst the Sulphur Tyrant-birds and the Guira Cuckoos preyed on nothing but mice.

The domestic cats, as they invariably do in such plentiful seasons, absented themselves from the house, assuming all the habits of their wild congeners, and slinking from the sight of man—even of a former fireside companion—with a shy secrecy

* From 'The Field' of Feb. 3, 1883. Communicated by the author.

in their motions, an apparent affectation of fear, almost ludicrous to see. Foxes, Weasels, and Opossums fared sumptuously. Even for the Common Armadillo (*Dasypus villosus*) it was a season of affluence, for this creature is very adroit in capturing mice. This fact might seem surprising to anyone who marks the uncouth figure, toothless gums, and the motions—anything but light and graceful—of the Armadillo; and perhaps fancying that, to be a dexterous mouser, an animal should bear some resemblance in habits and structure to the Felidæ. But animals, like men, are compelled to adapt themselves to their surroundings; new habits are acquired, and the exact co-relation between habit and structure is seldom maintained.

I kept an Armadillo at this time, and good cheer and the sedentary life he led in captivity made him excessively fat; but the mousing exploits of even this individual were most interesting. Occasionally I took him into the fields to give him a taste of liberty, though at such times I always took the precaution to keep hold of a cord fastened to one of his hind legs; for as often as he came to a kennel of one of his wild fellows, he would attempt to escape into it. He invariably travelled with an ungainly trotting gait, carrying his nose, beagle-like, close to the ground. His sense of smell was exceedingly acute, and when near his prey he became agitated, and quickened his motions, pausing frequently to sniff the earth, till, discovering the exact spot where the mouse lurked, he would stop and creep cautiously to it; then, after slowly raising himself to a sitting posture, spring suddenly forwards, throwing his body like a trap over the mouse, or nest of mice, concealed beneath the grass.

In the autumn of the year countless numbers of Storks (*Ciconia maguari*) and of Short-eared Owls (*Otus brachyotus*) made their appearance. They had also come to assist at the general feast.

Remembering the opinion of Mr. E. Newman, quoted by Darwin, that two-thirds of the Humble Bees in England are annually destroyed by mice, I determined to continue observing these insects, in order to ascertain whether the same thing occurred on the Pampas. I carefully revisited all the nests I had found, and was amazed at the rapid disappearance of all the Bees. I was quite convinced that the mice had devoured or

driven them out, for the weather was still warm, and flowers and fruit on which Humble Bees feed were very abundant.

After cold weather set in the Storks went away, probably on account of the scarcity of water, for the Owls remained. So numerous were they during the winter, that any evening after sunset I could count forty or fifty individuals hovering over the trees about my house. Unfortunately they did not confine their attentions to the mice, but became destructive to the birds as well. I frequently watched them at dusk, beating about the trees and bushes in a systematic manner, often a dozen or more of them wheeling about one tree like so many moths about a candle, and one occasionally dashing through the branches until a Pigeon—usually the *Zenaida maculosa*—or other bird was scared from its perch. The instant the bird left the tree they would all give chase, disappearing in the darkness. I could not endure to see the havoc they were making amongst the Oven-birds (*Furnarius rufus*—a species for which I have a regard and affection almost superstitious), so I began to shoot the marauders. Very soon, however, I found it was impossible to protect my little favourites. Night after night the Owls mustered in their usual numbers, so rapidly were the gaps I made in their ranks refilled. I grew sick of the cruel war in which I had so hopelessly joined, and resolved, not without pain, to let things take their course. A singular circumstance was that the Owls began to breed in the middle of winter. The field-labourers and boys found many nests with eggs and young birds in the neighbourhood. I saw one nest in July, our coldest month, with three half-grown young birds in it. They were excessively fat, and, though it was noon-day, had their crops full. There were three mice and two young Cavies (*Cavia australis*) lying untouched in the nest.

The Short-eared Owl is of a wandering disposition, and performs long journeys at all seasons of the year in search of districts where food is abundant; and perhaps these winter-breeders came from a region where scarcity of prey, or some such cause, had prevented them from nesting at their usual time in summer.

By August (1873) the Owls had vanished, and they had, indeed, good cause for leaving. The winter had been one of continued drought; the dry grass and herbage of the preceding year had been consumed by the cattle and wild animals, or had

turned to dust, and with the disappearance of their food and cover the mice had ceased to be. The famine-stricken cats sneaked back to the house. It was pitiful to see the little burrowing Owls; for these birds, not having the powerful wings and prescient instincts of the vagrant *Otus brachyotus*, are compelled to face the poverty from which the others escape. Just as abundance had before made the domestic cats wild, scarcity now made the Burrowing Owls tame and fearless of man. They were so reduced as scarcely to be able to fly, and hung about the houses all day long on the look-out for some stray morsel of food. I have frequently seen one alight and advance to within two or three yards of the door-step, probably attracted by the smell of roasted meat. The weather continued dry until late in spring, so reducing the sheep and cattle that incredible numbers perished during a month of cold and rainy weather that followed the drought.

How clearly we can see in all this that the tendency to multiply rapidly, so advantageous in normal seasons, becomes almost fatal to a species in seasons of exceptional abundance. Cover and food without limit enabled the mice to increase at such an amazing rate that the lesser checks interposed by predatory species were for a while inappreciable. But as the mice increased, so did their enemies. Insectivorous and other species acquired the habits of Owls and Weasels, preying exclusively on them; while to this innumerable army of residents was shortly added multitudes of wandering birds coming from distant regions. No sooner had the herbage perished, depriving the little victims of cover and food, than the effects of the war became apparent. In autumn the earth so teemed with them that one could scarcely walk anywhere without treading on mice; while out of every hollow weed-stalk lying on the ground dozens could be shaken; but so rapidly had they been devoured by the trained army of persecutors, that in spring it was hard to find a survivor, even in the barns and houses. The fact that species tend to increase in a geometrical ratio makes these great and sudden changes frequent in many regions of the earth; but it is not often they present themselves so vividly as in the foregoing instance, for here we see countless myriads of highly organised beings rising into existence only to perish almost immediately, scarcely a hard-pressed remnant remaining after the great reaction to continue the species.

THE BIRDS OF LAMBAY ISLAND, CO. DUBLIN.

BY H. CHICHESTER HART, B.A.

THE island of Lambay, 595 acres in extent, lies off the coast of Dublin, about two and a half miles from the nearest point of that county at Portrane. The coast-line is high and precipitous, with the exception of a small sandy bay at the harbour and a short stretch of low shore on the west and south-west side of the island. Its margin is about seven miles in length, and the shape is roughly hexagonal. The cliffs vary in height to about 250 ft., and are sheer for a considerable distance in many places, as on the north-east side, west of Freshwater Bay, and on the south-east cliffs below Raven's Well.

There is little timber on Lambay; a small planting of sycamores at the castle, and a stunted growth of shrubs, such as blackthorns, brambles, &c., in a few places, is all the shelter of this nature the island affords.*

There are two or three resident families of peasants, and a large partly-ruined, partly-inhabited castle, with a good deal of cultivation at the south and south-west of the island. Elsewhere it is a heath, affording good pasture, with a few small rivulets and a slight marsh or two. The chief produce of the island is that of a dairy farm and a rabbit warren.

Lambay is the chief resort for cliff-breeding birds on the east coast of Ireland. Dalton, in his 'History of Ireland' (1838), says, "The Cornish Chough, *Corvus graculus*, with red bill and shanks, is frequently seen here; also the Rock Pigeon, *Columba rupicola*." In 1851 Thompson, in his 'Natural History of Ireland' (vol. iii., p. 368), remarked:—"The species reported to me (by Mr. R. R. Montgomery) as breeding at the cliffs of the island of Lambay, off the Dublin coast, in 1850, were Puffins, Razorbills, Common and Black Guillemots, Common and Green Cormorants, Greater and Lesser Black-backed Gulls, Herring Gulls, Kittiwakes, and Manx Shearwaters. In 1849 the Lesser Black-backed Gull was not observed there, and of the Greater there were three pairs; Herring Gulls and Kittiwakes were very numerous. The

* A 'Flora of Lambay,' by the writer of the present paper, is now in the press of the Royal Irish Academy.

Raven's nest was thrice robbed of six eggs, and four of the Shearwaters were taken from the holes in which their nests were placed and wantonly destroyed by boys." In 1853 Watters, in his 'Natural History of the Birds of Ireland' (p. 267), added to this list of birds the Common Gull, and remarked further, that—"Amongst the land-birds which frequent the same (eastern) face of the rocks we find the Peregrine (rarely of late years), the Kestrel, Raven, Hooded Crow, Jackdaw, and Stare (the Chough is also said to nidify in rare instances), the Wheatear, Window Martin, Swift, and Rock Pigeon."

Since the year 1870 I have frequently visited Lambay in the breeding-season, and during the last four or five years I have gone there regularly to botanize and watch the birds, staying upon two occasions for several days, being indebted for my accommodation upon the island to Mr. Dillon, the courteous agent of Lord Talbot de Malahide. The above statements about the Lambay birds are still substantially correct, but time has produced alterations, and, in addition to a fuller account, I have ventured to insert some observations about the range of the rarer species on the east side of Ireland generally. With the winter visitants I am not dealing. Lambay is probably visited as a halting-place by most of the winter migrants, but there are no sloblands or salt-marshes of any extent to attract coast-feeders, so that a visit at that season would be most unlikely to repay the trouble.

Lambay is not very readily visited, and there is no public accommodation; moreover, the island is most happily preserved as a rabbit-warren, so that the birds are but slightly molested.

WHITE-TAILED EAGLE, *Haliaetus albicilla*, Gmelin.—Had an eyrie on Lambay during the last century (Watters), but now seems to have entirely deserted the east side of Ireland. I have been continually amongst the Wicklow mountains for the past fifteen or twenty years, and cannot be positive that I have ever met with any Eagles there. In 1879 an Eagle was seen on Kippure, feeding on a hare, by George Barker, wood-ranger. He believed it was a Golden Eagle. This is the latest instance I am aware of. A caretaker on Lough Bray, who has known the mountains there for about sixty years, gave me some definite information:—"About fifty years ago (*circa* 1832) I got to look at an Eagle's nest in the cliffs above the upper lake. Up to that time they had always

bred there. It was the 'Grey Eagle.' Round the nest were numerous remains of hares, grouse, and lambs. It was very large. That year, or the next, some gentlemen came and got the eggs, and the birds never came back, nor did he ever hear of their being on those mountains since." Lough Bray is in the mountain border between Wicklow and Dublin. Eagles have, no doubt, formerly bred on Lugnaguilia, but I have never seen one there. With reference to the name "Grey Eagle," Macgillivray, speaking of the White-tailed Eagle, says:—"In the Hebrides and Highlands the old bird is named an *Iolair ghlas*, the grey eagle, and the young an *Iolair riamhach*, the striped eagle."

PEREGRINE FALCON, *Falco peregrinus*, Gmelin.—Called the "Main-hawk" at Lambay, where it breeds regularly. In 1881 two pairs reared their young, one of which we captured. This nest was about a hundred feet above sea-level, on the cliff south of the Pilot's Hill, on the east side of the island. A cousin of mine, whom we lowered with a rope, described it as being full of Puffins' heads. The brood was three, two of which escaped. This was on June 14th, and a week later a second pair brought away their young at the Seal Hole, about half a mile south, where they bred again the following year. In 1882 two eggs were taken and a young bird left, which had not quitted the nest at the end of May. In previous years they bred sometimes here and sometimes upon Ireland's Eye, six miles south, which they seem to have finally forsaken. Their nest is large and flat, of twigs and grass, lined with hair, wool, or fine weeds. The young are covered for about a fortnight with a thick white down. The eggs frequently are only three in number. Here, as in Donegal (where I have observed nine distinct breeding-places), the nest is found in the closest proximity with Razorbills and other sea-fowl, and this is the more remarkable since the Falcon selects his site and commences to breed before his neighbours do, who fearlessly swarm around the bird who preys upon them. However, the Puffin seems to be his favourite food, and I do not find him on such closely familiar terms. It is probably only for convenience sake and as a quick supply for their young that the Falcon feeds on these birds; game, especially Grouse, seem to be their favourite food. There is no difficulty in finding the home of the Peregrine. When the visitor approaches their cliff in the breeding-season, as soon as the birds' suspicions are

aroused, the male starts out screaming, and flies around at a distance of one or two hundred yards, with a harsh and incessant cry. As long as the intruder remains this is continued, and if the mate be disturbed from the nest both birds keep up the concert. The nest is invariably inaccessible without the aid of a rope. The parents remain about the breeding haunt till late in the summer. The young are slow in arriving at maturity; they are usually able to fly about the middle of June. On the east of Ireland I have met the Peregrine on the Mourne Mountain, and on the Antrim coast in two or three places to the northward; while south of Lambay it bred at Luggela, in Wicklow, in 1882, and previously. The cliffs above Lough Nahanagan, in the same county, were—till recently, at any rate—inhabited by these birds, and I have seen them also at Lough Bray, but they have become very scarce in this county. There is no suitable habitat along the coast till we round Carnsore, excepting Bray Head, in Wicklow, where they formerly bred. After Carnsore I saw Peregrines, in 1882, at the Saltee Island, at cliffs near Fethard, and at Ardmore Head. As a rule they prefer sea-cliffs, but I met with them the same year breeding in the Twelve Bens, in the County Galway.

KESTREL, *Falco tinnunculus*, Linn.—A pair or more usually breed on the north side of the island.

SONG THRUSH, *Turdus musicus*, Linn.—Usually a couple of pairs breed. Thrushes have been scarcer on the island since the hard winter of 1880; they appear to be summer visitors.

BLACKBIRD, *T. merula*, Linn.—A few inhabit and breed on the island.

HEDGESPARROW, *Accentor modularis*, Linn., and **REDBREAST**, *Erythacus rubecula*, Linn.—Breeding and residing in small numbers.

STONECHAT, *Saxicola rubicola*, Linn.—Two or three pairs breed. Probably migrant.

WHEATEAR, *S. ænanthe*, Linn.—A summer visitor; several pairs breed amongst the rabbit-holes.

WHITETHROAT, *Sylvia rufa*, Bodd.—Lambay is quite a favourite summer haunt of this cheerful songster, the dense tangles of bramble there being well adapted for breeding quarters.

WILLOW WREN, *Phylloscopus trochilus*, Linn.—One or two pairs were breeding in the neighbourhood of the castle, 1882. A rare summer visitor to Lambay.

WREN, *Troglodytes parvula*, Koch.—Frequent.

PIED WAGTAIL, *Motacilla lugubris*, Temm.—Formerly not infrequent, but scarce since the hard winter. A pair reared a brood in 1882.

MEADOW PIPIT, *Anthus pratensis*, Linn.—Common.

ROCK PIPIT, *A. obscurus*, Lath.—A few pairs breed.

BUNTING, *Emberiza miliaria*, Linn.—One pair at least bred in 1882, at the south-western corner of the island. The species is frequent on the neighbouring mainland.

YELLOWHAMMER, *E. citrinella*, Linn.—Breeds sparingly; more numerous before the hard winter.

CHAFFINCH, *Fringilla cœlebs*, Linn.—A few breed about the castle.

GREENFINCH, *Coccothraustes chloris*, Linn.—Several breed about the castle.

LINNET, *Linota cannabina*, Linn.—Not uncommon; large flocks visit the island; with them are also hen Chaffinches and Sparrows.

TWITE, *L. flavirostris*, Linn.—I saw a pair of these birds in September, 1881.

SPARROW, *Passer montanus*, Linn.—Frequent, but chiefly observed as an autumn visitor.

STARLING, *Sturnus vulgaris*, Linn.—Flocks arrive in September. Some breed on the cliffs at the north-west corner of the island.

RAVEN, *Corvus corax*, Linn.—The Raven breeds annually at Lambay. Although laying five or six eggs it frequently rears only two or three young ones. On September 9th, 1881, I was staying at Lambay, and had seen the parent birds the two previous days. On this day two young made their appearance, and for the chief part of that day the island resounded with croakings, screamings, and the din of war. Wherever the young set foot the old birds flew past, buffeting them with their wings and pursuing them in the air. They continued thus to harass them until the unfortunate progeny left the island, when peace was restored. This expulsion of the young occurs annually, but the latter are seldom, as in this case, foolhardy enough to return. Last year I watched a similar proceeding on one of the Twelve Bens in Connemara, where the mountain was evidently not considered wide enough for more than a pair. Occasionally Ravens have bred at Ireland's Eye, near Lambay. In September,

1881, I climbed to the summit of a tabular-topped pinnacle at the north-eastern end of this island—a difficult feat, which the Ravens resented as an unwarrantable intrusion. This is probably a favourite roosting-place, and they have bred on the cliffs below. The Raven and the Peregrine are very jealous neighbours, and are continually having battles on the border-ground of their domains. In Donegal I have frequently seen one drive the other away when trespassing. It is not usual to find them side by side as at Lambay, yet I know a small isolated mountain in Galway where both species breed in close proximity, with only the summit between them, the Raven, as it should be, on the northern side, and the Peregrine to the south. At Howth Ravens have reared their young several times between 1870 and 1880; four were taken about 1872 by my cousin, Mr. M'Dougall, who showed me their nest of 1878. A pair used frequently to be seen about the Baily Lighthouse, but within the last few years they are perhaps deserting Howth for Lambay. In Co. Wicklow they still cling to their old breeding-haunt at Lough Bray, and though often banished, they are usually to be met with about Lugnaguilia. They have been destroyed in places in this county by letting down “flams” to their nest and burning them out. It is believed they attack lambs and tear out their eyes, but a herd who has lived in their neighbourhood for sixty years “never knew them to meddle with lambs, unless dead.” The Raven breeds very early; I have seen the young flying strong in the second week of May. It is said to breed on the Saltee Island, but I saw none there this year. It is not infrequent in the mountainous districts of the west and north of Ireland.

HOODED CROW, *C. cornix*, Linn.—Is included by Watters amongst the birds breeding on the rocks at Lambay, but it has not done so recently, and is now rarely, if ever, seen in this part of Ireland.

ROOK, *C. frugilegus*, Linn.—Is of frequent occurrence.

JACKDAW, *C. monedula*, Linn.—Breeds on the cliffs on the northern side.

CUCKOO, *Cuculus canorus*, Linn.—A summer visitor. One or two usually remain a short time, perhaps long enough to deposit their eggs and leave.

NIGHTJAR, *Caprimulgus europæus*, Linn.—I saw a Nightjar on Lambay in May, 1882. A pair or two usually breed on Howth,

and it is not unlikely that they occasionally visit Lambay for the same purpose.

WOOD PIGEON, *Columba palumbus*, Linn.—Is frequent in autumn and spring, but I have no evidence of its breeding on the island.

ROCK PIGEON, *C. livia*, Temm.—Formerly bred on Howth and Lambay, but no longer a resident. I have only seen Rock Pigeons once on Lambay, namely, in September, 1881, in Saltpan Bay, where I saw six together; they did not, however, return to breed in 1882. Four were seen (and I believe shot) on Howth in the spring of 1880. From the Saltees and Hook Head westward the Rock Pigeon becomes frequent. From Lambay to the Saltees there is hardly any suitable head-quarters for rock-birds till we round the south-western corner at Carnsore.

LAPWING, *Vanellus cristatus*, Meyer.—Two or three pairs were breeding in May, 1882, as they do annually. They are known as the "Phillipene."

OYSTERCATCHER, *Hæmatopus ostralegus*, Linn.—I have seen these birds on Lambay several times during the breeding season, and am assured they have nests there, but I have not succeeded in finding them.

CORN CRAKE, *Crex pratensis*, Bechst.—Heard at the end of May, 1882, and was informed that it breeds annually on the island.

PUFFIN, *Fratercula arctica*, Linn.—Breeds in some numbers, perhaps thirty or forty pairs, chiefly on the east side of the island. The single egg is usually laid in a hole a foot or two from the surface on steep banks above the rocky part of the coast, but I have sometimes found it at the entrance. They arrive at the end of April, commence to lay in the second or third week of June, and leave the island about the first week of August. A pair or two breed on Irelands Eye. The largest colony of Puffins I know is that on Saltee Island, Co. Wexford.

RAZORBILL, *Alca torda*, Linn.—Is much more numerous than the last species, and lays about a fortnight earlier. It breeds on all sides of the island, except the western, but chiefly abounds on the eastern cliffs. These birds choose ledges of rock for their eggs, usually higher up than the Guillemot, but both may often be seen together. Next to the Kittiwake this is perhaps the commonest bird on the Lambay cliffs.

GUILLEMOT, *Uria troile*, Linn.—Breeds at the same time as the last-named species, and chiefly upon the north side of the island, nearer the water. There is a horizontal fissure in the cliffs west of Freshwater Bay, at a place called “New House,” where these birds especially abound. This fissure is about thirty-five feet above the water, and twenty or thirty feet in length. It is deep enough to permit one to wriggle along the floor, which is covered with Guillemots’ eggs, and I have twice succeeded in climbing into it, in the hope of obtaining a Shag’s egg. This is the chief home of the Guillemot on the island.

BLACK GUILLEMOT, *Uria grylle*, Linn.—I have seen a pair or two of these birds on the water within a mile or two of Lambay in summer, but it appears to have entirely forsaken the island as a breeding-place. Watters, writing in 1853, estimated that between one hundred and one hundred and fifty of these birds annually incubated there at that time. This number is probably much exaggerated. Mr. R. J. Montgomery wrote to Thompson, after visiting Lambay in June, 1849, that he was unable to find their eggs, though breeding on the south side of the island. Thompson himself saw several there on June 5th, 1838. My own experience leads me to believe that this bird does not usually assemble in large numbers to breed. On the Donegal cliffs I have only seen them in companies of a dozen or two about their time of incubation. A couple of pairs still breed on Ireland’s Eye, and I have reason to believe on Howth also.

CORMORANT, *Phalacrocorax carbo*, Linn.—Breeds sparingly on the north side of the island, the young being usually flown by the end of May. Formerly they bred here in much greater numbers, but their nests being easily pilfered they have been much reduced. The nests are in close proximity. On Breaghy Head, in Donegal, in a space of about fifty square yards I have noticed nearly as many nests, the young being mostly flown on May 26th: at this period the female bird will not leave her eggs till almost touched, uttering at the same time a peculiarly deep hoarse note of alarm. The nests are large and loosely constructed, and usually, but not always, built on the clayey margin near the summit of the cliffs. A pair or two of Cormorants may possibly still breed on Howth, but the presence of these birds during the breeding season, like some of the Gulls, Sandpipers, and the Gannet, is no evidence of their having nests in the neighbourhood.

SHAG, *P. cristatus*, Fab.—A very few pairs still breed, but this species is very scarce on Lambay. I was informed that not more than four or five pairs were there in 1882. These are scattered over the island, and the only site I am sure of is in a cave near the New House. Both species of Cormorant inhabit this cave, but the larger chiefly frequent Carnoon and Saltpan Bay, on the north-west of the island. A pair or two of Shags breed, I believe, also on the south side of the island, but my visits have in general been late for these birds. On Horn Head and the Sheephaven cliffs, in Donegal, I have found the greatest difficulty in obtaining the eggs of the Shag. Their favourite place is near the roof of a cave from the entrance to a considerable distance in, where the overhanging nature of the situation, as well as its moistness and slipperiness, renders climbing most dangerous. The Gap of Doonmore, on Horn Head, the finest cave I have seen, is inhabited by both the Cormorant and Shag. Here I succeeded in climbing to their nests at the end of May, when the majority of the eggs were hatched. A peculiarity about these birds which I have not seen mentioned is that eggs and young birds in widely different stages of incubation may be found in the same nest. In one nest of the Shag I found an egg nearly fresh, a young bird just hatched, and another apparently about a week old. The eggs of both species are very variable in size, especially those of the Cormorant, which are sometimes not bigger than those of the Shag.

KITTIWAKE, *Rissa tridactyla*, Linn.—Breeds in great numbers from near the water's edge to about three-fourths of the way up the cliffs on all sides of the island except the lower western shore. It makes a small, compact, and comfortable nest, which it sometimes affixes to the sheer face of a cliff (as at the New House), with hardly a prominence to commence upon. I have usually observed three eggs in each nest, and these are laid early in June. The Kittiwake is much the most abundant bird on Lambay, and breeds sparingly on Ireland's Eye.

GREATER BLACK-BACKED GULL, *Larus marinus*, Linn.—Used formerly to breed on Lambay, as stated in my introductory remarks, but I have never seen this bird there, and it is scarcer along the Dublin shore than formerly. The nearest breeding-place of this Gull, I believe, is at the Saltee Islands, but for this, however, I cannot personally vouch.

LESSER BLACK-BACKED GULL, *L. fuscus*, Linn.—Is nearly, if not quite, banished from the island as a breeding bird. I have seen a pair or two in different years, but have never found their nests.

HERRING GULL, *L. argentatus*, Linn.—Breeds in some numbers, perhaps about fifty or sixty pairs. The nests are usually placed on shelving rocks, where they slope from a tolerable height to the water. From this circumstance they are easy of access and often robbed; hence the birds are diminishing in numbers. From Howth and Ireland's Eye they have been very nearly banished. On the south side of Lambay they have a haunt of their own. In other parts of the island they breed alongside of the other sea-fowl. The eggs are usually three in number and laid in the beginning of May.

COMMON GULL, *L. canus*, Linn.—Is included in Watters' list of birds breeding on Lambay; he states, however, that only a few pairs nest there. Thompson does not mention it, and I have never seen it on the island. It seldom selects a maritime breeding station.

MANX SHEARWATER, *Puffinus anglorum*, has long been known to breed on Lambay Island, though I am not aware that the eggs have ever been brought thence. As my observations on this bird at Lambay have already been published, in connection with remarks on its singular note (p. 81), it will be unnecessary to repeat them here.

[In reference to the Ornithology of the Dublin coast, attention may be directed to articles by Mr. Blake-Knox in earlier volumes of 'The Zoologist' (1865—1869), entitled "Ornithological Notes from the Co. Dublin," and to his account of "The Migratory and Wandering Birds of Co. Dublin" (Zool. 1866, pp. 220, 309); as also Mr. H. L. Cox's articles on the "Birds of Dublin and Wicklow" (Zool. 1879, pp. 449, 477).—ED.]

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

ON looking over my notes for September last I found that I omitted to mention the occurrence of several Turnstones and Oystercatchers, which were brought in to our birdstuffers during that month. The Turnstones had nearly completed their autumnal moult, showing a fair amount of ferruginous-brown on their backs and scapulars; their breasts, too, were fairly black. The stomachs of the Turnstones I found quite empty, but those of the Oystercatchers contained remains of limpets and fragments of their shells.

On November 4th I examined a Short-eared Owl and a Kestrel which had been brought to a Stonehouse birdstuffer. The stomachs of both contained a quantity of mouse-fur, and that of the Kestrel a very large beetle-grub.

On November 9th, the wind blowing strong from the N.N.W., I observed a Northern Diver off the Devil's Point, Stonehouse, and an immature Black Redstart on the rocks in the same locality. By the 11th some Black Redstarts were to be seen on the cliffs near the Plymouth citadel. I examined the stomach of a Tawny Owl, and found in it nothing but a caterpillar of the cabbage moth, *Mamestra brassicæ*. The Northern Diver, I am sorry to say, was killed and brought in to a local birdstuffer. Its stomach was crammed with the remains of small swimming crabs, mixed with a few stones, and its gullet contained a few prawns. Another was obtained on the 23rd, making the sixth brought in during this month.

On November 13th, wind blowing very hard from the N.E., a male Black Redstart on the rocks near the citadel showed a white patch on the wings, but little black on the breast. There were two immature Red-breasted Mergansers in the Devonport market. On the 23rd I examined a Little Bustard which had been sent up from Trevone, near Padstow, Cornwall. It was a bird of the year, and its stomach contained a large mass of turnip-leaf, unmixed with gravel or stones. The last Cornish specimen mentioned by the late Mr. Rodd, on the authority of Mr. Stephen Clogg, was killed in the parish of St. Martin, near Looe, on January 9th, 1875.

On December 7th, wind N.N.E., snow having fallen during the previous night and early morning, flocks of Sky Larks and Redwings were seen continually passing over from east to north-west until dark. In the markets were numbers of Wigeon, Teal, a few Golden-eyes, and one young White-fronted Goose. Red-shanks were also to be seen, and many Herons and Kingfishers found their way to the birdstuffers' shops. I have often remarked that the two last-mentioned species suffer much during severe cold. During this month I met with an unusual variety of the Oystercatcher, having a narrow white streak or band running from the base of the under mandible down the throat and joining the collar on the neck. In the stomach of this bird were small mussels and a piece of slate.

Many Great Black-backed Gulls made their appearance about this date in our harbours, which they generally do about Christmas. On the 28th there was a Turnstone and Dipper in the market,—the latest date for the Turnstone I have ever noted in this locality,—also a Greenshank which had nearly attained its full winter plumage, the general tint of which, on the upper parts, was a very pale and pleasing grey.

On January 15th there were numbers of Razorbills in small parties, on the water and on the wing, flying swiftly about in every direction—a sight seldom witnessed in the harbour or Sound. There were also some more Northern Divers on the coast. On the 16th a Black Guillemot, *Uria grylle*, in weather-worn winter plumage, was brought in to be preserved, but I could not ascertain exactly where it was shot. It is a bird rarely met with in this locality, and the last I saw was brought from Falmouth, and had been killed by a friend of mine in that harbour. The stomach of the present specimen contained nothing but shrimps or young prawns. About this date I examined another young Red-breasted Merganser, a Great Spotted Woodpecker, and a variety of the Starling in very light brown or drab-coloured plumage, all the spots and markings appearing as if nearly washed out. This variety, I think, is not uncommon.

On the morning of January 25th an immature Iceland Gull made its appearance in the harbour after a very strong wind from the S.S.E., which by the 26th had increased to a heavy gale to the north-west, with hail and snow. Razorbills were flying about like wildfowl.

Frost set in during the night of February 1st, changing by the morning to a strong south-east gale. I observed a Northern Diver and several Razorbills, together with a few Guillemots and a great number of Kittiwakes, which latter had become very plentiful after the recent gales; and by the 11th I remarked that many Shags had assumed fine crests, with the yellow-spotted gular pouch, and were apparently in full nuptial dress.

On the morning of the 14th, after a tremendous storm during the previous night, some fine old Cormorants, with hoary necks, fine crests, and oval white spot on thighs, were seen constantly diving, and bringing up such large fish as seemed almost impossible for them to swallow, but which with much apparent difficulty they at length managed to get down. The struggles, twistings, and turnings of these big fish in the distended gullet of the half-choked Cormorant actually gave them the appearance of going down at the back of the neck. The following day I saw one of these birds, which had alighted perfectly exhausted on a heap of stones on the quay of the Great Western Docks. It had an immense Mullet in its throat, which I was told it could neither get up nor down, allowing itself to be captured with the greatest ease. The fish, however, was at length disgorged, but the poor bird did not long survive.

About this time a Common Guillemot, in perfect breeding plumage, was knocked down by a boatman with a paddle, and a fine Gannet was shot on the rocks of Drake's Island in the Sound. Gannets are seldom seen so near the harbour.

On February 18th, wind north, I saw another Black Redstart. A Shag, with very fine crest and beautiful bottle-green plumage, had just been killed; and by the 25th, a very fine day, the Herring Gulls were uttering their spring or breeding cry, and many of the Black-headed Gulls had assumed tolerably dark heads. About this date flocks of Greenfinches appeared on the coast.

My friend Mr. Thomas Wolferstan, informs me that not long since his brother shot a Partridge, which on being brought to table was found to have been wounded at some time, by a large piece of wood which had entered the chest and pierced the breast-bone, where it broke short off and still remained, the flesh-wound being so perfectly healed as not to be perceived. The bird seemed to have entirely recovered, and was in first-rate condition.

NOTES AND QUERIES.

The Preservation of Epping Forest.—Naturalists, especially those living in and around London, will rejoice at the collapse of the Great Eastern Railway Company's scheme in regard to Epping Forest. The Directors of this Company, ignoring the Epping Forest Act, 1878, and ignoring also the fact of there being already thirteen railway-stations in proximity to the Forest, not one of which is distant from it more than two miles, have been for some time endeavouring to persuade the public that another station is needed, and in a Bill introduced into Parliament for an extension of their line, calmly proposed to cut through the Forest in a direction from Chingford to High Beech, erecting an unsightly viaduct by the way, and an equally objectionable public-house at the terminus, in one of the most beautiful parts of the Forest. The most extraordinary circumstance in connection with this scheme is that the Directors of the Company not only ignored entirely the provisions of the Epping Forest Act of 1878, but actually persuaded the Conservators of the Forest, appointed under that Act, to do the same! The 7th section of this Act provides that "the Conservators shall at all times keep Epping Forest uninclosed and unbuilt on, as an open space for the recreation and enjoyment of the public; and they shall by all lawful means prevent, resist, and abate all future inclosures, encroachments, and buildings, and all attempts to inclose, encroach, or build on any part thereof, or to appropriate or use the same, or the soil, timber, or roads thereof, or any part thereof, for any purpose inconsistent with the objects of this Act." Further that "the Conservators shall not sell, demise, or otherwise alienate any part of the Forest, or concur in any sale, demise, or other alienation thereof or of any part thereof," and that "the Conservators shall at all times, as far as possible, preserve the natural aspect of the Forest." The duties of the Conservators are therefore perfectly clear, and it is inconceivable that they should have so far ignored the very object which the Legislature had in appointing them as to give their consent in the way they did to the Railway Company's scheme. The adoption of such a course can only be explained on the assumption that the probable development and improvement in value of properties adjacent to the proposed new line, and belonging to the Conservators or some of them, caused them to think more of private interest than of public trust. Fortunately for those who regard the Forest, or what is left of it, in a true light, and appreciate the boon which was conferred on the public by the Act of 1878, there were not wanting champions to do battle with the Company, and to recall the Conservators to a sense of duty. Foremost amongst those who came forward in this behalf were the members of "The Essex Naturalists' Field Club," who by means of deputations to the county

members, Sir Selwyn Ibbetson and Lord Eustace Cecil, Sir John Lubbock, and others, took care to have the true facts of the case laid before Parliament before the day came for the second reading of the Bill. Indeed it may be said with truth that the rejection of the Bill, which was eventually thrown out by a majority of 230 members against 82, was in a great measure due to the energetic steps taken with that view by the indefatigable Secretary of that Society Mr. William Cole, by the President Professor Boulger, and by the ex-President Mr. Raphael Meldola. To these gentlemen, especially, are the thanks of naturalists due for having come forward in the way they did to uphold the preservation of the Forest according to the letter and spirit of the Act by which it was declared to be the property of the public, and to prevent the abstraction of any part of it for private purposes. Epping Forest is one of the very few remnants of primæval woodland now existing in England, and has for nearly a century been the resort of that class of Londoners who take the purest delight in a ramble in free air in search of natural objects and phenomena. It is a significant fact that the petitions presented by the Essex Naturalists' Field Club bore signatures representing nearly 4000 amateur naturalists of London, who consider the railway accommodation now available to be more than sufficient for their requirements, and resent the threatened invasion and destruction of their recreation ground, as well as any further curtailment of its area. Now that the House of Commons has so emphatically pronounced against the Bill in question it is to be hoped that we shall hear no more of any such barefaced attempts at annexation and spoliation.

Notes from the Solomon Islands.—We reached Ugi, one of the easternmost islands of the Solomon group, on the 9th November, and left again on the 12th, visiting Florida and Guadalcanar on our way to the Duke of York Island. The Solomon Islands are of course a good deal more tropical in their appearance than the New Hebrides. It appears to be constantly raining, so that all the under vegetation is very dense, and everything reeks with vapour. We were fortunate while we were at Ugi, as it only rained the afternoon of the day we left. I went on shore every day we were there, but on the whole was disappointed with what I got. Butterflies were very scarce, and a large proportion of those I obtained were more or less worn. I got about 140 good specimens, most of them being new to me. Of course I saw a great many I was unable to catch. Many of them flew among the highest branches of the loftiest forest trees, so that it would take some time to get at these species. There were five or six fine *Papilios* about, and one I captured about $5\frac{3}{4}$ in. across the wings. As there were no roads of any kind, my hunting was confined to narrow native paths, where it was difficult to catch butterflies as they crossed; and if missed they went away at once into the forest, where

it was impossible to follow them. Small birds were very scarce, but the trees above one were well stocked with cockatoos, parrots, and pigeons of various kinds. These were all extremely difficult to see, although one could hear them in dozens overhead. One of our fellows shot several about the size of our common wood-pigeon, but they were dry eating. From the ship I often saw big white cockatoos flying above the trees, and their white plumage looked very conspicuous against the deep green of the forest. Their flight is slow and flapping, and they keep up a continual shrieking all the time. One day we started early, a party of five of us, with two natives for guides, and walked a few miles inland to visit a native village. The path led us through the densest forest, and we had to walk in single file. In some places the trees were so thick overhead that the path below was in perfect gloom. Some places we passed through would have been fine spots for the natives to have attacked us; however, they are all friendly in this island. The ferns were in the greatest abundance, and many of them were extremely beautiful, as were also the palms, which were in great variety. As we neared the native village the path became more open, and upon reaching it there was a little cleared ground in the immediate vicinity, and here I managed to catch five or six dozen butterflies, several new species among them. The natives living in the village seemed pleased to see us. Their houses are better built than those of the inhabitants of the New Hebrides, and the men themselves are a finer race. We got them to boil us some water and to cook some yams, and a pigeon we had shot on the way. I had brought a bottle of claret, with some cheese and biscuits, so we had our lunch in the middle of the village with an admiring group of natives looking on. We obtained by barter a few curios in the way of spears, clubs, &c., things hard to be got now-a-days when there are so many labour vessels about, from which the natives procure rifles and hatchets, and have no longer need to make spears or clubs. We left the village about 2 p.m., and got on board at 4.30. These savages might easily have killed and eaten us had they felt inclined to do so, but they seemed to be quite peaceable. Very few of the fair sex were to be seen, and those that put in an appearance were abominably ugly, and some of them had tame flying-foxes clinging to their hair, scarcely pleasant pets one would fancy. Dec. 11, 1882.—We are now steaming towards the anchorage at Brisbane; and since writing the above we have been to Duke of York Island, and Cooktown in the north of Queensland, only staying a very short time at either place, so that I had not much chance of doing anything. At Meoko, Duke of York Island, it rained most of the time we were there, but I had one day, and managed to catch a few new butterflies, and again was disappointed in the scarcity of species and specimens. I was, however, delighted at capturing examples of a magnificent Ornithoptera, a butterfly nine inches across the wings! and,

moreover, was lucky enough to find its larva, and at the present moment have a fine healthy chrysalis, which I am in hopes of breeding. It is about ten times as big as that of *P. machaon*! At Cooktown I was glad to take about 13 fresh species of Australian butterflies, and if we had only remained there a few days longer I might have doubled the number. From Cooktown here (about 1100 miles) we steamed inside the great barrier reef and close to the mainland, often passing through groups of lovely islands, and occasionally anchoring alongside one of them for the night. One afternoon, towards four o'clock, I noticed flocks of strange birds passing the ship, and making for some thickly-wooded islands ahead of us. They kept a long way from the ship, and I was at a loss to make out what they were. At one time I thought they were wildfowl of some kind. They were white with black wing-feathers and white black-tipped tails. They flew with their necks stretched out, but not fast enough for wildfowl. Then I fancied they might be plovers, but they seemed too big, and did not flap their wings sufficiently. At last a flock came within nearer range, and I discovered, to my astonishment, that they were pigeons, and, as we neared the islands, there they were in thousands upon thousands settling on the trees. By the time we anchored it was six o'clock, and there was only half an hour's daylight left, and, with one of my messmates, away I went to try for a shot. At the first report of our guns what a sight met our eyes! A living stream of these birds rushed from every tree and bush upon these three islands and wheeled about overhead, every moment some of them descending to pitch again. The trees were high up on the island, and as the birds flew out they were regular rocketers and nearly out of shot. I landed on a sand-spit, while the other fellow pulled round to the opposite side of the island, and fired away a lot of cartridges at the birds as they whistled through the gloom high above me, but unless the birds fell on the little sand-spit they were lost, for the bush was so thick it was impossible to find them; indeed, I never thought of looking. I bagged three brace, and my friend when he returned had a brace, and a small reef heron. If we could have had a couple of hours of daylight we might have shot hundreds. They were fine and plump birds, as large as our English Ring Dove, creamy white, with primaries, secondaries, and tertiaries of the wings smoky-black, and tail-feathers tipped with black. I skinned a couple of them the next day. They are the white nutmeg pigeon of Gould (*Myristicivora spilorrhoea* of G. R. Gray).—*Extract from letter of G. F. MATHEW, R.N., F.L.S. Communicated by Rev. M. A. Mathew.*

Vermin destroyed on an Irish Estate.—By permission of Mr. Smyth, of Headborough, I give from his carefully-kept register a table of "vermin" which were trapped, poisoned, or otherwise destroyed during twelve years

that he preserved his own and some adjoining properties, extending over about three miles square, to the south of the River Bride, near its confluence with the Blackwater, both large tidal rivers. Game preservation being but little practised in this county, fresh Hooded Crows, Magpies, &c., must have continued to flock in, notwithstanding the destruction of their kindred. The smaller number of Kestrels destroyed is not to be taken as showing their comparative rarity, but being, as Mr. Smyth observed to me, far less bold than Sparrowhawks they less frequently fall victims to the keeper's gun or traps. The fact that no Long-eared Owls were killed after 1876 may be attributed to the fact that Dunmoon Wood, in the vicinity of "the mountain," which was their chief resort, was cut down about that time. Trapping was carried on only over an area of less than 1000 acres, containing much woodland, bounded on the north, east, and south by rivers and streams, and having a mountain district to the west, the population being very small. The number of Cats trapped within this area is very remarkable, as showing how prone these creatures must be to wander away, and take to a wild, marauding life.

Table showing the numbers of vermin destroyed at Headborough, Co. Waterford, during the twelve years ending 1879.

	Dog.	Cat.	Stoat.	Kestrel.	Sparrow-hawk.	Brown Owl.	Barn Owl.	Hooded Crow.	Magpie.
1868	9	22	18	6	15	5	1	26	59
1869	3	16	21	4	18	2	1	13	26
1870	3	24	20	-	19	3	2	22	49
1871	1	36	25	6	26	3	1	29	58
1872	2	31	48	5	26	6	-	26	28
1873	12	64	76	7	23	3	1	29	20
1874	7	49	39	6	24	4	-	29	32
1875	9	44	25	5	24	2	1	26	25
1876	9	49	47	6	24	4	-	27	27
1877	8	62	45	1	31	-	-	26	30
1878	5	70	51	-	14	-	-	14	21
1879	11	82	55	2	16	-	-	22	20
Total	79	549	470	48	260	32	7	280	404

In addition to these there were killed in 1872 a Raven, in 1876 a Hen Harrier, in 1877 two Peregrines and a Merlin, and in 1878 a Merlin and a Hen Harrier.—R. J. USSHER (Cappagh, Co. Waterford).

Asiatic Lepidoptera.—The publication is announced of the first part of 'The Butterflies of India, Burmah, and Ceylon,' by Major G. F. Marshall, R.E., and L. de Niceville. The illustrations, drawn by native artists, under the direction of Mr. Wood-Mason, have been accurately reproduced in chromo-lithography by Messrs. West, Newman & Co.

MAMMALIA.

Note on the Age of a Wild Rabbit.—A wild Rabbit which has been brought up by hand recently entered upon its eleventh year, having been captured on the line in February, 1873, by its present owner, a guard on the Caledonian Railroad, when only a few weeks old. This rabbit is a great tea-drinker, taking a "dish of tea," with sugar and milk, whenever any is brewed. Though partial to the kitchen-fender in damp weather, at other times it is much in the open air, and is perfectly healthy, being plump and showing no signs of senility.—H. A. MACPHERSON (Carlisle).

Homing Instinct in Bats.—In order to observe the flight of these animals in sunlight I captured three Pipistrelles in an old castle situate on Little Island in the River Suir, near Waterford. These I placed in a box, so as to exclude all light, and carrying them to the mainland, to a point distant about half-a-mile, I liberated them separately. Each of them, after making one or two circuits in the air, went off in a direct line for its home. There was a very bright sun at the time, and a strong wind blowing against them.—G. GYLES (Kilmurry House, Waterford).

The Serotine Bat in Essex.—Although the Bats found in the county of Essex have received in the past a fair share of attention at the hands of Yarrell, Doubleday, and Messrs. Joseph Clarke and Henry Laver, the occurrence of the Serotine, *Vespertilio serotinus*, has not hitherto been recorded, having perhaps been confounded with the Noctule. I am glad therefore to be able to state that Mrs. Joseph Smith, of Great Saling, has in her possession a specimen of this Bat which was shot more than twenty years ago in the garden at Pattiswick Hall, near Coggeshall. It is so shrunk through bad stuffing that it is useless for me to give its dimensions.—ROBERT MILLER CHRISTY (Saffron Walden).

The Pilot Whale in Devonshire.—After the severe gale at Sidmouth between the 11th and 14th February last a Pilot Whale, or Bottle-nose (*Globicephalus melas*, Trail), was found by some fishermen in a dead or dying state on the reef of rocks called Hook Ebb, one and a half mile east of Sidmouth. They towed it to Sidmouth on the 15th, and by means of ropes and two horses got it upon the beach at the east end of the town, where they enclosed it with sails and exhibited it to the public in the orthodox manner practised on these occasions. Price of admission, "What you like, sir!"—the takings being carefully deposited in a money-box placed in a conspicuous position on the top of the Whale, to be divided between the thirteen joint owners of the prize. A real god-send this Whale has been to the unfortunate fishermen, for hardly anything has been done in fishing for months, the weather has been so very stormy all the winter. I visited Sidmouth on the 20th February, and the Whale

was still quite fresh. It was a female, 16 ft. 8 in. from tip of the snout to the notch of the tail. Girth at the thickest part of the body just in front of the dorsal fin, as near as I could measure it, about 9 ft. Width of the tail part of the body, near the root of the flukes, 2 ft. From tip to tip of the tail flukes, 4 ft. From snout to dorsal fin, 5 ft. Eye very small, 4 in. from angle of the mouth. Flippers very narrow and pointed, 3 ft. 9 in. in length. The weight was supposed to be about two and a half tons by the men who hauled it up on the beach. The inside of the mouth was covered with hard blunt tubercules like shagreen. The colour was deep black, with a heart-shaped mark on the throat of a light greyish white, continued in a streak along the belly to the vent. When cut up it yielded about half a ton of blubber, which in some places was 6 in. thick. My friend Mr. P. O. Hutchinson, of Sidmouth, who kindly assisted me in obtaining all information possible about the animal, was zealous enough to keep watch and ward over the bones, so that none might be lost, when the carcase was boiled down, and a member of the Committee of this Institution having generously furnished funds for purchasing them, I hope to get the skeleton put together. The scapulars are extremely thin in the centre, and of very soft spongy bone. They are curiously corrugated across the blade. There are fifty-eight vertebræ (two or three more than stated by Bell and Gray), the last caudal being very small. All the cervical vertebræ are anchylosed together, the centre of the two last only being free. The teeth are $\frac{10}{10}$ – $\frac{10}{10}$, and extremely deciduous, the alveoli being very shallow, and filled with a dark-coloured spongy substance. The basithyroid bone of the tongue is very large for the size of the animal. The figure given in the second edition of Bell's 'British Quadrupeds' is not good, as it fails to show the remarkably broad, compressed form of the hinder portion of the body or tail, and the flukes are badly drawn. The dorsal fin is very different in the figure from the natural form. The only recorded occurrence of this species on the Devonshire coast that I have met with is the one mentioned by Bellamy (Nat. Hist. South Devon, p. 196) as having been captured off Plymouth, April, 1839. The following are the measurements of the skull of the Sidmouth specimen:—Total length of skull, 28 $\frac{3}{4}$ in.; length from snout to blow-hole, 17 in.; length of teeth-series, 6 in.; length of lower jaw, 19 $\frac{1}{2}$ in.; width at notch, 9 in.; width at orbit, 16 in.; width of intermaxillary, 6 $\frac{1}{2}$ in.; width at middle of snout, 8 in.; height at occiput, 12 in.—W. S. M. D'URBAN (Albert Memorial Museum, Exeter).

BIRDS.

Hybrid between the Lesser Black-back and Herring Gulls.—The hybrid between these two gulls mentioned by me at p. 450 of 'The Zoologist' for 1881 as having been bred in my pond in May, 1880, and

allowed to fly, has from that time to the present paid me frequent visits, sometimes staying for two or three days together, sometimes leaving immediately after feeding-time, and sometimes not making its appearance for weeks together. It has now so nearly reached its adult plumage that I think it worth while to give a short description of it, as I have lately had a good many opportunities of looking at it, and am always afraid each visit may be its last, as it might meet with an accident on one of its journeys to and from the Bristol Channel, though as a rule it flies very high and quite out of shot. The wing-coverts and mantle appear now to have assumed their fully adult colouring, there being none of the brown markings of the immature plumage left. The quills, however, are not those of the adult bird, though I should think after another moult they, as well as the tail-feathers, which still have a few brown markings left, would be so. The wing-coverts and mantle are very pale indeed for a Black-back, though much too dark for a Herring Gull. The legs are flesh-colour like the Herring Gull, if anything a little brighter and more highly coloured, now showing no sign of the yellow of the Lesser Black-back. Any one shooting it and describing it might say it was a pale Lesser Black-back with the legs and feet coloured like those of a Herring Gull, but I do not think anyone would speak of it as a dark Herring Gull. The legs and feet are both the same colour, not like those mentioned at p. 70 of 'The Zoologist' for 1882 as one yellow and one pale flesh-colour. With regard to the remarks there made, I perfectly agree with my friend Mr. Howard Saunders that that bird is not a hybrid between *Larus fuscus* and *Larus marinus*. I believe these two gulls would never cross under any circumstances. But I do not go so far as to say, "I do not believe in hybrid gulls in a wild state," for I do believe that the Herring Gull and the Lesser Black-back would cross occasionally in a wild state, seeing the readiness with which they do so in captivity. I think an odd pair, a male of one and a female of the other, would breed without any difficulty, except, perhaps, the difficulty of finding a breeding-place where they would be free from persecution, for I do not think they would be allowed at a breeding station of either Herring Gulls or Lesser Black-backs. The bird above mentioned differs materially from *Larus affinis*, at least according to Mr. Dresser's description, for he describes *Larus affinis* as having the legs and feet yellow.—CECIL SMITH (Bishop's Lydeard, Taunton).

Singular Cause of Death of a Chaffinch.—The circumstances of a curious accident which a Robin met with, as recounted by Mr. Long (p. 123), have brought to my mind an instance of a somewhat similar nature which befel another small bird—namely, a Chaffinch—some years ago. On June 11th, 1877, whilst passing through the Sandburn Woods, a few miles from York, I picked up a dead male Chaffinch in breeding condition beneath

a large fir tree. The cause of death seemed to be that it had got its left wing by some means over its neck, and had been unable to get it back. The neck passed between the eighth and ninth of the quill-feathers. However strange it may seem that a bird should meet with such an accident, I could come to no other conclusion than that just stated. The bird was unwounded, in good condition, with grit in its gizzard, and lay in a spot to which it was hardly likely to have been carried by human agency. It had been dead just too long to admit of preservation, but I have stuffed another bird in the position in which I found this one.—ROBERT MILLER CHRISTY (Saffron Walden).

Keble and the Nightingale.—Let me call attention to Keble's well-known lines on the Nightingale (in his verses for the first Sunday after the Epiphany), as illustrating the closeness and accuracy of his observation :—

If, the quiet brooklet leaving,
Up the stony vale I wind,
Haply half in fancy grieving
For the shades I leave behind,
By the dusty wayside drear
Nightingales with joyous cheer
Sing, my sadness to reprove,
Gladlier than in cultur'd grove.

Many readers of 'The Zoologist' who have heard the Nightingale singing from a dusty hedgerow by the side of a turnpike road "all day long," and have been struck by the strange preference of the bird for such a spot, will assent to the truth of these lines.—MURRAY A. MATHEW (Stonehall, Wolfscastle, Pembrokeshire).

Early Assumption of Breeding Plumage in the Cormorant.—A Cormorant was brought me on February 17th in the most perfect breeding plumage I have ever seen, the white patches on the thighs being peculiarly brilliant. This is nine days earlier than the date mentioned by Yarrell, who states that a Cormorant in the Zoological Gardens, Regent's Park, attained its greatest perfection of plumage by February 26th.—STEPHEN CLOGG (Looe). [See observations by Mr. Gatcombe, p. 167.—ED.]

Great Grey Shrike near Croydon.—The other day I obtained from Mr. Thorpe, of Southend, Croydon, a good skin of a Great Grey Shrike, caught by a birdcatcher at Croham Hurst, about two miles from here on November 18th, 1882.—PHILIP CROWLEY (Waddon House, Croydon).

Diver with the Tarsi feathered.—In a small collection of local birds exhibited by Mr. Gray, birdstuffer, at Dover, is a Red-throated Diver (*Colymbus septentrionalis*), with the anterior surface of both tarsi feathered throughout their whole length. The bird is, as mounted, a very small specimen.—ALFRED H. COCKS (Folkestone).

Pectoral Sandpiper in Dumbartonshire.—I have recently had an opportunity of inspecting a specimen of the American Pectoral Sandpiper, *Tringa maculata*, Vieillot, which was shot by Sir George Leith Buchanan on the 24th November last in the neighbourhood of his residence, Ross Priory, Alexandria, N.B. In a note which he addressed to the Editor of 'The Field,' published in that journal on the 2nd December last, referring to this bird, he says:—"It rose from some rushes, and I took it for a Jack Snipe until I picked it up. As it was blowing hard at the time, with snow and rain, I could not see distinctly." It is a rare straggler to the British Islands, and from the dates recorded of the few specimens which have been procured here (some sixteen in number) it would seem to have been almost invariably met with in autumn, generally in September and October. —J. E. HARTING.

Singular Accident to a Bearded Tit.—Mr. Long's account (p. 123) of a Robin whose lower mandible became caught in the "skin of the neck and along the sternum" reminds me of a similar case which recently came within my experience. On visiting my aviary one morning about nine o'clock, I found a favourite Bearded Tit sitting in one corner of the cage, its neck arched, its chin tucked in, the upper mandible at right angles to the breast, and the lower one apparently gone. On catching the bird and examining it, I found that the lower mandible was, as described by Mr. Long, embedded in the skin of the breast. I at once extricated and straightened it as well as I could, for it was terribly bent. The bird on being released at once went to the water and drank freely, and in two or three days had quite recovered, its bill having returned to its normal shape. I must add that the bird's breast was completely saturated by saliva, the escape of which it was powerless to prevent.—JOHN YOUNG (Bayswater).

Montagu's Harrier in Ireland: Correction of Error.—At page 32 I communicated a note on a Harrier which has been preserved at Brittas since 1855 under the above name. Having recently obtained this bird through the kindness of Mrs. Dunne, and submitted it to Mr. A. G. More, I am informed by him that it is not *Circus cineraceus* but *C. cyaneus*. —R. J. USSHER (Cappagh, Co. Waterford).

Corn Crake in Winter.—On December 15th, 1882, I received from John Evans, of Bourne, a male specimen of *Crex pratensis*, which had been recently caught at Thurlby, near that town. This bird was much paler in appearance than usual, and very emaciated, although the stomach was full of snails (*Helix hispida*), which were whole, although the epidermis was destroyed by the fluids of the stomach. The humerus of the right wing evidently had been broken at some time and knit together again, but not in a straight line, the junction being about three-eighths of an inch from the fracture, and at an angle, thereby shortening the bone considerably,

and no doubt greatly retarding the power of flight. If every case of hibernating Corn Crakes were carefully examined, we should probably find some malformation or injury fully accounting for the reason of not migrating, and that it is not from inclination that this species sometimes stays the winter, but simply from inability to leave the country.—R. M. CHASE (Edgbaston, Birmingham).

Crested Lark breeding in England.—In the course of correspondence with Mr. Doggett, taxidermist, of Cambridge, who received in the flesh for preservation the specimen of the Short-toed Lark which was captured by a birdcatcher near Cambridge in November last, as already recorded (p. 33), he informed me that he then had in his possession alive an example of *Alauda cristata* which had been taken more than two years previously from a nest at Ibiston, near Cambridge. Some half-dozen instances of the occurrence of this bird in the British Islands have been noted since 1836, when one was obtained in Ireland; but no instance of its breeding here has hitherto been recorded, although the fact of its occasionally doing so may well have been overlooked from its similarity to the commoner *arvensis*.—J. E. HARTING.

Hybrid Song Birds.—Referring to my former note on this subject (p. 127), I may remark that hybrids between Linnet and Goldfinch, Linnet and Lesser Redpole, Linnet and Bullfinch, and Bullfinch and Goldfinch were exhibited in February last at the Crystal Palace Bird Show. Mr. Verrall, of Lewes, has also paired the Twite with the Greenfinch in his aviary, and a wild-bred hybrid between the Goldfinch and Greenfinch is now in West London. In referring to hybrids between Linnet and Greenfinch (p. 127), I forgot to allude to the hybrid of this description recorded in the first volume of Mr. Stevenson's 'Birds of Norfolk.'—H. A. MACPHERSON (Carlisle).

Notes from Gibraltar: Correction of Error.—In my Notes from Gibraltar (p. 100) there is an unfortunate transposition which alters the meaning of the first paragraph. It should read:—"Being at Gibraltar during the spring of 1882, I paid particular attention to the vernal migration, visiting Tangiers, an excellent place for observation, from 28th March to 5th April, again from 24th to 30th April, and from 25th to 30th May."—E. F. BEECHER.

Great Grey Shrike in Suffolk.—Mr. J. E. Taylor, of the Ipswich Museum, in a note on this bird in the March number (p. 125), makes the misleading statement that "it is believed to be the only specimen killed here for many years past." Within the last few months I have seen one in the flesh and heard of another, both shot near here, and others have been obtained in years past in this neighbourhood.—HUGH TURNER (Ipswich).

Dipper Singing during Frost.—The observations of the Rev. Murray A. Mathew and Mr. Ussher on the Dipper singing during severe frost are not new. Similar observations will be found in Thompson's 'Natural History of Ireland' (vol. i., p. 117) and in 'The Zoologist' (vol. ii., 1844, p. 450). In the 'Proceedings' of the Dublin Natural History Society (vol. i., p. 93—103) there is an interesting paper by Mr. G. H. Kinahan on "The Songs of Birds," in which the author states that July is the only month in which he has not heard the Dipper sing. The first time I ever heard the Dipper was on December 1st, 1866. Not knowing then that this bird is a winter songster I made a note of it. I again heard it on January 10th, 1867, and on the 18th of the same month. On February 4th, 1868, I find this entry in my note book—"I think the Water Ouzel *only* sings in winter." That remark has been since corroborated, for I have no recollection of ever having heard the Dipper in summer. December, January, and February are the singing months of the Dipper; the harder the frost and the heavier the snow the more he sings, and an observation which recorded the Dipper as singing on a hot day in June or July would be far more extraordinary than any record of its winter song. Dippers are common here.—RICHARD M. BARRINGTON (Fassaroe, Bray).

[We have heard the Dipper sing in May in Northumberland, on the Till near Wooler, and also during the first week of October at Llanberis and Pont Aberglaslyn, in North Wales, but do not remember to have heard its song during the summer months. But then it should be observed we have seldom been in the haunts of the Dipper at that season of the year.—ED.]

Sooty Shearwater in Norfolk.—On the 26th July, 1851, I obtained a Shearwater which was taken alive at Lynn, and which was recorded in 'The Zoologist' for that year (pp. 3234 and 3279), as well as in Morris's 'Naturalist' (vol. i., p. 189), under the name of *Puffinus cinereus*. At the suggestion of Mr. J. H. Gurney, jun., I borrowed this bird a short time since from the Lynn Museum, and we examined it together. It is certainly a young male (by dissection) of the Sooty Shearwater (*Puffinus griseus*).—T. SOUTHWELL (Norwich).

Nestling Grey Plover from the Orkneys.—I have long intended to call attention to the fact that a young Grey Plover in down, from the Orcades, is preserved in the Hope Collection at Oxford. Is this specimen *authenticated* or otherwise?—H. A. MACPHERSON (Carlisle).

[We are not aware that the breeding of the Grey Plover in the Orkneys has ever been ascertained or recorded. Of course the presence of a hind-toe would place the identity of the species beyond doubt, but we should like to know something of the history of the specimen.—ED.]

Ring Ouzel defending its Nest.—In 1868, when fishing one of the Dartmoor streams, I observed a Ring Ouzel in a very excited state, flying round me, and making at the same time a peculiar cry. I searched the banks of the stream for its nest, but not being able to find it, I resumed my rod, still followed by the bird. About eighty yards further on there grew a small shrub; when I got within a few feet of this, the Ouzel struck my hat, and again attacked me. This time I caught it in my landing-net. On examining the bush another bird flew out of its nest, which contained no eggs. This I suppose was the female, as on liberating my prisoner he flew after it, and I saw no more of them.—G. GYLES (Kilmurry House, near Waterford).

Great Grey Shrike near Croydon.—A specimen of this bird was caught by some bird-catchers at the bottom of Croyhamhurst in November last, and was sold by them to our local taxidermist, Mr. C. Thorp. It was a mature female in good plumage.—FREDERICK LEE BERNY (61, North End, Croydon).

Variety of the Red-backed Shrike.—A specimen of this bird, of an uniform creamy white colour, was shot at Belstead, near Ipswich, last summer.—HUGH TURNER (Ipswich).

Uncommon Birds near York.—On October 28th I had a fine specimen of *Anser albifrons* sent from Cottingwith. It was one of three which were all shot on the 27th or 28th. A female American Bittern was shot near Northallerton. I saw the bird in the flesh, and carefully compared it with a skin of the Common Bittern in my own collection, and am satisfied of its being the American species. Its gizzard contained the remains of field mice. On November 30th a male Bewick's Swan was sent to me from East Cottingwith. Length, 35 inches; expanse, two yards: weight, 13 lbs. 14 oz.; an adult bird. Early in December a Waxwing was seen about a mile from York, and an adult male Goldeneye was sent to me from Cottingwith.—J. BACKHOUSE, JUN. (West Bank, York).

FISHES.

Marine Fishes in Fresh Water.—Does the life or well-being of a fish whose natural habitat is the sea depend in any way upon the high specific gravity or salinity of the water? or may it not exist with equal comfort in fresh, provided that it can there obtain its normal food, and that the conditions are the same in other respects, with the one exception? Without taking into account the denizens of lakes and rivers, which migrate periodically to the ocean, or the sea-fish and crustaceans, which are in the habit of ascending streams for a considerable distance, it has been shown in

aquaria that several species—*e. g.*, flounders, eels, and sticklebacks—thrive as well in one medium as the other, no difference in the aëration of the blood being perceptible. This [being the case, might not any fish be “acclimatised,” if one may use the expression, to a similar modification of its native element? The fact that seals, walruses, and other marine mammals can be kept in fresh water has, of course, as little to do with the matter as that sea-birds will float in a pond; but it seems to me that if this can be proved to be a mere question of gradual habituation, where fishes are concerned, no definite physiological obstacle existing, it will be a subject of importance to those who establish aquaria at a distance from the coast for purposes of study. Sea-vegetation, to the growth of which the marine salts are undoubtedly essential, could be supplied readily enough when necessary. Some years ago I purchased some sea-horses at a port in South America,—nine of them, I think,—and to my astonishment discovered that the vessel in which they had been kept contained fresh water. They had been caught three weeks or a month previously, and I suppose that the nigger who sold them to me had put them into the butt for the simple reason that it was too much trouble to fetch salt water from the shore—though he had a theory on the point wherewith to exculpate himself. At any rate, he assured me that none had died, and I regard the circumstance that he did not ask payment for any beyond the nine as stronger evidence of the truth of this assertion than anything that science could bring forward. As soon as I obtained possession of them I turned them into a large deck-tub full of sea-water immediately. Two hours later I found two of them dead, and the rest apparently moribund. It would have been very interesting to have worked out the cause of this, for, on such slender testimony as the one case afforded, I could not come positively to the conclusion that it was the salt water which was killing them, but I wanted to save my sea-horses, not to try experiments; accordingly I removed them from the briny fluid and restored them to fresh. The sick recovered, and reached Paris safely three weeks afterwards. They were there established in a fresh-water aquarium, but unfortunately fell victims to the rapacity of a small crocodile, which escaped from its proper tank one night before the sea-horses had enjoyed their new quarters a week. Sudden change of water will of itself often prove fatal to fish. At the Zoological Gardens, Regents Park, I was recently shown some young dace which had lived in a vase of water which had not been renewed for over two months; they were the survivors of a numerous company which had been repeatedly decimated by previous changes. The other day a gentleman gave me an account of some sea-anemones which he had imported into one of the midland counties from the Dorsetshire coast, together with a small barrel of salt water. They were placed in an aquarium, from which the dust was excluded as carefully as possible; a “high-water mark” was

scratched on the glass, and week by week fresh water was added to supply the loss by evaporation and keep the contents of the vessel up to the original level. So situated the anemones, with some appropriate seaweeds, flourished for over a year. Then their owner brought back another barrel of water with him on returning from a visit to the seaside, treated his *Actiniidae* with the entire sample of the English Channel, and killed them all.—ARTHUR STRADLING (29, Woodford Road, Watford).

Do Fishes Sleep?—The Berlin aquarium is especially well arranged for the scientific study of fish life, and lately it has settled a much-disputed point. "Do fishes sleep?" has often been asked, but never authoritatively answered. Older investigators denied the possibility, but lately this opinion has been changed in consequence of the following facts:—Generally the life of a fish is more monotonous than that of animals or birds. The fish devotes its time entirely to seeking nourishment. It does not regularly hunt its prey, though it is known that it is much more active at some times than at other times when it seems to rest quietly. This active state is more frequent, as even when the fish is apparently playing at rest it is still ready to seize on any passing prey; but when tired or satiated it remains quiet in a way that resembles the sleep of the beasts of prey. Generally fish hunt by night as well as by day; indeed some only commence their activity with the twilight, and rest during the day, in certain places, either lazily floating in the water, or hidden in the mud, their belly only visible. These facts have been lately proved by Dr. Hermes and others. In one division of the Berlin aquarium were about a dozen Carp, *Cyprinus carpio*, that commence in October to act curiously. From time to time the majority of the fish, occasionally all of them, would assume a crooked position, and remain so for hours, or until they were disturbed. When worms or other food were thrown into the water they would spring up to seize it, and immediately resume their old position. These fish were often very particular in choosing their resting-places. Some would examine carefully with their heads the surrounding rocks and stones, then slowly turn themselves over to the right or left side, and either remain quiet or swim away to seek some other place. Other fish would lie on the gravel, resting on their heads and tails, in the form of a bow. One carp always stood on its head with its body erect in the water—a veritable wonder of balancing that showed the capabilities of its fins. It was easy to arouse most of the fish by means of food or of a noise, but some of them slept so soundly that it was only possible to disturb them by hitting or shaking them repeatedly. The lidless, always open eye of the fish makes it difficult to distinguish its sleep from its periods of ordinary rest, but this last experiment was conclusive. The suggestion that this behaviour is the result of illness is answered by stating that this habit of sleep was observed nearly every day

or more than six months, and during all that time the fish ate regularly, and were free from any appearance of sickness. It is possible that, as carp bury themselves in the mud during the winter, when they are free in the ponds, this behaviour in the aquarium was simply their usual winter sleep, modified by disturbances and their altered mode of life.—*Scientific American*.

[On this subject an interesting report of some original observations by Mr. W. R. Hughes will be found in 'The Zoologist' for 1874, p. 3895.—ED.]

ANNELIDES.

Earthworms in New Zealand.—The following interesting observations form part of a communication, from Mr. A. T. Urquhart, to the editor of the 'New Zealand Journal of Science,' and appear in a late number of that periodical:—"In October, 1875, I dug a trench on some newly-cleared land—a raised beach at Manukau Harbour. The section then showed about $4\frac{1}{2}$ inches of black mould and a horizontal layer, 1 inch thick, of burnt clay, wood-ashes, small stones, and pumice, lying on a brownish green arenaceous clay. The vegetation cleared was the growth of some thirty years. A portion of the land was left undisturbed. Measurements again taken a few days ago gave an average depth of $1\frac{1}{4}$ inch of turf, $5\frac{3}{4}$ inches of black mould, and there was no perceptible difference in the layer of ash. An angular block of trachyte—about twenty-five pounds in weight—placed in May, 1875, had sunk 1 inch, allowing for the turf." As the results of some accurate calculations as to the number of worms per acre, Mr. Urquhart gives results so considerably higher than Henson's, that he would have hesitated to publish them were he not in a position to prove them. Henson, it will be remembered by the readers of Darwin on 'Vegetable Mould,' calculates that there are 53,767 worms per acre in garden mould, and above half that number in corn-fields. Mr. Urquhart's estimates, founded upon digging about a quarter of an acre, as well as by a large number of tests on various parts of the fields, some that were under pasture for over sixteen years, gave from four to twenty-six Earthworms per each square foot. The alluvial flats, slopes, and richer portions of the upper lands would average eight to the square foot, or say 348,480 per acre. In the uncultivated fern-lands worms are scarce. In New Zealand worms not only leave their burrows, but climb up trees in search of food, this chiefly in the night time, though often until a late hour on damp warm mornings.

ARCHÆOLOGY.

Origin of the name "Daker-hen."—What is the derivation of the provincial name "Daker-hen," bestowed on the Landrail or Corncrake, and is it still in use anywhere? It may be found mentioned in the works

of Willughby, Bewick, Montagu, Gilbert White, and other writers on Ornithology, but none of them explain its meaning. Yarrell does not mention it. It appears to be of some antiquity, and was in use in 1559. See Elyot's 'Bibliotheca' (sub voce *Crex*), perhaps better known as Cooper's 'Thesaurus,' since this Latin-English Dictionary of worthy Sir Thomas Elyot was, under a new name, revised and augmented after his death by Cooper, Bishop of Lincoln. The north-country verb *daker* signifies "to work for hire after the usual day's work is over." Can the term as applied to the bird have reference to its reiterated cry being heard after sunset, when most other birds have retired to roost? Another idea which has occurred to me is this:—The substantive "daker" or "dicker" (Greek, *δεκα*, *ten*), employed in the leather trade, means a roll of *ten* skins. For illustrations of the use of the word see 'Extinct British Animals,' p. 169. Can the term in this sense have been applied to the bird from its habit of repeating its monotonous note ten times (or thereabouts) in succession? In support of this suggestion it may be remarked that in some parts of the country Whimbrel, from their reiterated note, are known as "the seven whistlers." Again, can the term *Daker* have any connection with the family name *Dacre*, sometimes spelled *Daker*? Lower, in his 'English Surnames' (ii., p. 13), states that the arms of the Tyrwhitt family are "gules, three Tyrwhitts or Lapwings or," which he says is allusive, and from this doubtless arose the legend about Sir Hercules Tyrwhitt having been rescued from impending death by the cry of "pee-wit." Camden cites this amongst curious local surnames. Possibly there may be some legend of this kind in connection with "the Dacre hen," which may explain the bestowal of the name. The Rev. George Ornsby, in his Introduction to the 'Household Book of Lord William Howard of Naworth' (1612—1640), printed for the Surtees Society (vol. 68), in which frequent mention is made of Lord Dacre, "the Dacre of the North," alludes to the old war cry which three centuries ago was wont to summon all retainers for a foray on the Scottish border—"a Daker, a Daker." These are mere suggestions of mine, which to many may perhaps seem more plausible than satisfactory. Possibly some correspondent may be able to throw more light on the subject than I am at present able to do.—J. E. HARTING.

First Introduction of a Rhinoceros into England.—The 'London Gazette' of October 9th, 1684, contained the following notice:—"A very strange beast called a Rhynoceros, lately brought from the East Indies, being the first that ever was in England, is daily to be seen at the Bell Savage Inn on Ludgate Hill from nine o'clock in the morning till eight at night." Another advertisement, evidently relating to the same animal runs as follows:—"A true representation of the Rhinoceros and Elephant lately brought from the East Indies to London, drawn after the life, and

curiously engraven in mezzo-tinto, printed upon a large sheet of paper. Sold by Pierce Tempest at the 'Eagle and Child' in the Strand, over against Somerset House Water Gate." This engraving must now be of some rarity, and we should be curious to learn whether the portrait is sufficiently faithful to enable an identification of the particular species of Asiatic Rhinoceros which was first imported to this country.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 15, 1883.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Mr. J. Jenner Weir exhibited a perfect hermaphrodite butterfly (*Lycæna icarus*), and a blue male and brown female of the same species for comparison. The hermaphrodite in question possessed two spotless blue wings on the left and two spotted brown wings on the right, thus being intermediate in colour between the two sexes.

Dr. W. C. Ondaatje exhibited a collection of thirty species of Ceylon corals, of which twenty were of a stony character. The series agree in the main with those of the Indian fauna; four are new species, namely, two of *Caloria*, one of *Pavonia*, and one *Alcyonium*, the two latter, however, showing most affinity to forms met with in islands of the Pacific Ocean.

A paper was read "On the 'Manna,' or Lerp Insect, of South Australia," by J. G. Otto Tepper. This contains observations on the insect in question, and on the peculiar saccharine substance derived from it and deposited on various species of Eucalypt trees.

March 1, 1883.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

The following gentlemen were elected Fellows of the Society:—W. B. Barrett, L. J. K. Brace, J. B. Bridgman, W. O. Chambers, W. E. Clarke, W. Godden, F. H. H. Guillemard, J. C. Havers, T. M. Hocken, C. H. Middleton Wake, J. C. Stirling, and the Rev. P. W. Wyatt.

Mr. W. T. Thistleton Dyer called attention to, and made remarks on, the dried leaves and rind of the fruit of oranges from the Bahamas partially destroyed by *Mytilaspis citricola*, Packard.

Mr. A. W. Bennett read a paper "On the constancy of Insects in their visits to Flowers." He stated, as a summary, that the different classes of insects show very great difference in this respect. Butterflies exhibit but little constancy, except in a few instances; but they would appear to be guided to a certain extent by a preference for particular colours. The

Diptera exhibit greater constancy, though by no means absolute. A much greater degree of constancy is manifested by the Apidæ; and this becomes all but absolute in the hive-bee. It is an interesting circumstance that this constancy appears to increase in proportion to the part performed by the insects in carrying pollen from flower to flower. A much larger number of observations is, however, needed in order to determine with certainty any general law, and especially a careful microscopic examination of the pollen attached to the proboscis, mandibles, legs, and under side of the abdomen and thorax. As regards preference for particular colours, the Lepidoptera under observation paid 70 visits to red or pink flowers, 5 to blue, 15 to yellow, and 5 to white; the Diptera paid 9 visits to red or pink flowers, 8 to yellow, and 20 to white; the Hymenoptera paid 303 visits to red or pink flowers, 126 to blue, 11 to yellow, 17 to white.

There followed a communication "On the methodic habits of Insects when visiting Flowers," by Mr. R. M. Christy. The author records in detail the movements of 76 insects whilst engaged in visiting 2400 flowers. He tabulates the results, and concludes that insects do possess a decided preference for a number of successive visits to the same species of flower, although this is not invariably the case. Most of the observations were made on bees, which seem to perform the fertilisation of at least one half of all the flowers fertilised by insects in this country. Butterflies, as a rule, seem to wander purposelessly in their flight; nevertheless some species, including the Fritillaries, are fairly methodic. The author believes that it is not by colour alone that insects are guided from one flower to another of the same species, and the sense of smell is suggested. Bees, he avers, have but poor sight for long distances, but good sight for short distances. Of 55 humble bees watched, 26 visited blue flowers; 12 of the bees were methodic in their visits, 9 only partially methodic and 5 not so: 13 visited white flowers; 5 were methodic and 8 not at all: 11 visited yellow flowers, of which 5 were methodic and 6 not: 28 visited red flowers; 7 were methodic, 9 nearly so, while 12 were not. Mr. Christy inclines to the opinion, though admitting paucity of data, that bees in a flight from their nest confine their visits exclusively or principally to one species of plants.

The Secretary, Mr. G. J. Romanes, read "Observations on living *Echinodermata*." He stated that starfish possess a sense of smell which is not localised in any particular organs, such as the ocelli, but is distributed over the whole of the ventral surface. The function of the *Pedicellariæ* was shown by some further experiments corroborative of those already published by him, in the 'Philosophical Transactions,' to be that of seizing upon and arresting the movements of fronds of sea-weed in order to give the pedicels time to establish their adhesions. It was also shown that the righting movements of *Echinus* when inverted on its aboral pole (which are performed by means of the pedicels) are due to central co-ordination

proceeding in part from the pentagonal nerve-ring surrounding the mouth, and in part from central nerve-matter distributed along the course of the radial nerve-trunks. One of the experiments whereby the fact of such central co-ordination (depending on a sense of gravity) was proved, consisted in rotating an inverted *Echinus* upon a wheel moving in a vertical plane. It was found that whatever phase in the righting manœuvre the *Echinus* might have attained at the moment when the rotation commenced was maintained so long as the rotation continued; but the manœuvre was resumed as soon as the rotation was allowed to cease. The paper concluded with an account of the effects of the various nerve-poisons on the *Echino-dermata*.

There followed, in abstract, the 17th part of the Rev. R. Boog Watson's memoir on the Mollusca of the 'Challenger' Expedition. In this part the family *Pyramidellidæ* is dealt with, and descriptions given of twenty-three new species of the genus *Eulima* and one of the genus *Stylifer*.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

February 20, 1883.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

Prof. F. Jeffrey Bell exhibited a selection of microscopical preparations received from the Zoological Station at Naples, and made some remarks upon them.

Mr. J. Jenner Weir exhibited and made remarks on an apparently hermaphrodite specimen of *Lycæna icarus*.

Mr. Sclater gave an account of the birds collected by Mr. H. O. Forbes during his recent expedition to Timor Laut, and exhibited the specimens. The species were fifty-five in number, sixteen of which were described as new to science under the following names:—*Ninox Forbesi*, *Strix sororcula*, *Tanygnathus subaffinis*, *Geoffroius tenimberensis*, *Monarcha castus*, *Monarcha mundus*, *Rhipidura hamadryas*, *Myriagra fulviventris*, *Micræca hemixantha*, *Grauculus unimodus*, *Lalage mæsta*, *Pachycephala arcitorquis*, *Dicaeum fulgidum*, *Myzomela annabellæ*, *Calornis crassa*, and *Megapodius tenimberensis*. The general facies of the avifauna as thus indicated was stated to be decidedly Papuan, with a slight Timorese element, evidenced by the occurrence of certain species of the genera *Geocichla* and *Erythura*; while the new Owl, *Strix sororcula*, was apparently a diminutive form of a peculiar Australian species.

Prof. F. Jeffrey Bell read the second of his series of papers on the *Holothuroidea*. The present communication contained the descriptions of some new species which the author had discovered while examining the specimens of this group contained in the collection of the British Museum.

Dr. Hans Gadow read a paper on the suctorial apparatus of the *Tenuirostres*, pointing out that the tubular construction of the tongue in this group is produced by the overgrowth of the horny lingual sheath, the edges of which curl upwards and inwards.

A paper was read by Mr. L. Taczanowski, Curator of the Museum at Warsaw, in which he gave the descriptions of some new species of birds in the collection made by Dr. Raimondi during his recent explorations in Peru. The species in question were seven in number, belonging to six genera, namely: — *Carenochrous Seebohmi*, *C. Dresseri*, *Phytotoma Raimondii*, *Ochthæca Jelskii*, *Upucerthia pallida*, *Cynanthus griseiventris*, and *Psittacula crassirostris*.

Mr. Taczanowski also read a communication from Dr. Dybowski, in which the sexual differences between the skulls of *Rhytina stelleri* were pointed out.

A communication was read from Mr. G. B. Sowerby, jun., containing the descriptions of nine new species of shells and of the opercula of two known species.

March 6, 1883.—OSBERT SALVIN, Esq., F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of February, and called attention to a female Panolia Deer, *Cervus eldi*, from Siam, received in exchange from the Jardin d'Acclimatation, Paris; a young male Thar, *Capra jemlaica*, presented by Lieut.-Col. Alex. A. A. Kinloch; and a male Blyth's Tragopan, *Cerionis Blythi*, presented by Capt. W. Brydon, and received through the kind mediation of the Zoological Gardens, Calcutta.

The Secretary exhibited, on behalf of the Rev. F. O. Morris, the drawing of a bird shot in Hampshire in November, 1882, which it was suggested represented a Tinamou of some species that had escaped from captivity.

Mr. J. E. Ady exhibited some microscopical preparations of bone, in one case showing the growth of blood-vessels into cartilage previous to ossification, and in another case representing a hard section in which the lacunæ and canaliculi were extremely well shown.

Dr. Hans Gadow read a paper on the laryngeal muscles of birds, and pointed out, first, that the muscles of the syrinx are developed from the sterno-hyoid muscles, and, secondly, that the cutaneous muscles are derived from superficial layers of the common muscular stratum; thirdly, the author considered the connection between muscle and nerve-supply, illustrating his remarks by diagrams.

A communication was read from the Rev. H. S. Gorham, containing the descriptions of some new species of Coleoptera belonging to the family

Eurotylidae. Twenty-nine new species of this family were described, of which ten were from the Philippine Islands, three from the Andaman Islands, two from Assam, two from the Malay district, six from Africa, and six from Peru. The species treated of belonged to the subfamilies *Encaustini* and *Dacnini*, the author reserving the other subfamilies for a future communication.

Dr. Gwyn Jeffreys read the sixth part of his communications on the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions. This included an account of the specimens of the groups of *Scissurella*, *Trochus*, *Turbo*, and part of *Littorina*, referable altogether to seventy species. Four genera and twenty species were for the first time described as new.

A communication was read from Mr. H. O. Forbes, describing a species of scarlet *Myzomela* obtained in the island of Boeroe, one of the Ceram group.

Mr. G. A. Boulenger read a paper on the Geckos of New Caledonia. The object of the author in preparing this paper was that it might serve as a guide to the identification of the *Geckotidae* of New Caledonia, and at the same time to bring the synonymy into order. To this end the author had compared the typical specimens in the Museums of Brest, Lisbon, Paris, and Brussels with those in the British Museum, and had given short descriptions of every species taken from typical or well-authenticated specimens. The number of species of *Geckotidae* actually known from New Caledonia was fourteen: of these two were recorded for the first time, one being new to science.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

Reports on the Scientific Results of the Voyage of H.M.S. 'Challenger' during the years 1873—76. Zoology; Vols. II.—VI.

SEVERAL more volumes of these valuable Reports have been published. In Vol. II. Prof. Moseley deals with the Hydroid, Alcyonarian, and Madreporian Corals, and furnishes descriptions of all the species dredged during the voyage, of which thirty-three are stated to be new. This Report is illustrated with sixteen plates and numerous woodcuts.

The collection of Birds, of which a Report, with several plates, has been prepared by Mr. P. L. Sclater, comprised about

900 specimens in skins, in addition to a large series in salt and spirits, and a collection of eggs.

Vol. III. includes an important and elaborately illustrated Report by Prof. A. Agassiz on the *Echinoidea*, and another by Dr. P. Hoeck on the *Pycnogonida*, of which a fine series was obtained during the voyage, thirty-three out of thirty-six species collected being described as new.

In Vol. IV. are three memoirs, all of much interest, and, needless to say, of scientific value, namely, Mr. Forbes' Report on the Anatomy of the Petrels, Prof. Haeckel's Report on the Deep Sea *Medusæ*, and the first portion of Dr. Theel's Report on the *Holothuroidea*.

Vol. V. contains a Report on the *Ophiuridea* by Theodore Lyman, and another by Dr. Cunningham on the anatomy of *Thylacinus cynocephalus*, *Phalangista maculata*, and *Phascogale calura*, based on specimens collected by the expedition.

In Vol. VI. Prof. Richard Hertwig gives a detailed and highly scientific account of the *Actiniaria*; while an equally elaborate Report on the *Tunicata* (*Ascidie simplices*) is furnished by Prof. Herdman.

These volumes, prepared under the superintendence of Sir C. Wyville Thomson, F.R.S., are published by order of Her Majesty's Government; and the plates, which have been executed in London, Paris, and Edinburgh, are perfect triumphs of the lithographer's skill.

The Micrographic Dictionary: a Guide to the Examination and Investigation of the Structure and Nature of Microscopic Objects. By W. J. GRIFFITH, M.D., and ARTHUR HENFREY, F.R.S. Fourth Edition, edited by J. W. GRIFFITH, the Rev. M. J. BERKELEY, M.A., and T. RUPERT JONES, F.R.S. 8vo. Parts XIII.—XXI., completing the work. London: Van Voorst. 1882-83.

THE last part of this very useful Dictionary, of which we gave a notice in 'The Zoologist' for August last (p. 319), has just been published, and the work, in its fourth edition, is now complete. It forms two bulky volumes of more than 800 pages, the first embracing the text and the second the plates. These

plates are fifty-three in number, and, with the addition of 818 woodcuts, contain figures of 2680 objects.

Looking to the length of many of the articles and the amount of information which they contain, it would have been no misnomer had the authors called their work an "Encyclopædia" instead of a "Dictionary." In their original prospectus it was described as "an index to our knowledge of the structure and properties of bodies revealed by the microscope": there can be no doubt, however, that it possesses many useful qualities beyond those strictly implied in the above definition; for the authors, without departing from the principal purpose of the work, have really furnished much more than a mere descriptive catalogue of objects, and the means of examining them; and a perusal of many of the articles will enable the reader, by the help of the system adopted, and references printed in small capitals, to acquire a general knowledge of particular departments of science.

The first edition was published in 1856. In this, the fourth, edition, the work has been thoroughly revised, and the systematic portions of the animal and vegetable kingdoms have been rearranged according to modern views, so far as is consistent with reference to existing standard treatises and monographs of the individual subjects. The structural portions also appear to have been enlarged, and corrected in relation to recent observations and experiments. This is as it should be, and the whole now forms a reliable and valuable work of reference.

One characteristic feature in the work deserves to be specially noted, and that is the bibliography which is given at the end of each subject. This is very useful. We have often had occasion to regret the absence of such aid in elementary works on Zoology, many writers appearing to think that the reader will require no further information than is inadequately compressed in a single text-book.

We are, therefore, glad to find that in the 'Micrographic Dictionary' the reader is furnished not only with an accurate digest on the classification and structure of the various objects described, but with the abbreviated titles of standard works of reference and important papers and monographs, in which a fuller exposition of the subject may be found, if wanted.

Rhopalocera Malayana: a Description of the Butterflies of the Malay Peninsula. By W. L. DISTANT. Royal 4to, with coloured plates. Parts I.—IV. London: The Author, care of West, Newman & Co., 54, Hatton Garden. Penang: R. Logan. 1882-83.

THIS work, which it is proposed to complete in seven or eight parts, and of which four are published, bids fair to be a most valuable contribution to the science of Entomology. The author has had the advantage of having himself collected many of the species he so well describes, having resided in the Province Wellesley and at Penang. He has been aided by the liberality of Mr. Logan, of Penang, whose collectors have been despatched to Quedah, Malacca, and Johore, and it is to that gentleman that the inception of the work is due. Many other collections have been examined, and Mr. Distant appears to have made himself familiar with the literature of his subject.

The work is much more than a mere dry monograph of Malay butterflies; it abounds in philosophical observations, and references are given to other authors who have dealt with the biology of the Lepidoptera.

The chromo-lithographic plates, by West, Newman & Co., of which there are four in each part, are excellent, and in most instances the representations are quite as good as if the more expensive painting by hand had been resorted to; indeed in one respect chromo-lithography has an advantage over the latter, inasmuch as greater uniformity is obtained, and it would be difficult to select one copy better than another.

It is very much to be regretted that the names of the insects figured are not given on the plates, for the name should, if possible, always appear in conjunction with the figure; references are then more quickly made, and the memory is materially assisted by the association.

To those who study the Diurnal Lepidoptera of the Indo-Malayan subregion the work will be indispensable.

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THE INTERNATIONAL FISHERIES EXHIBITION.

THE idea of an International Fisheries Exhibition seems to have arisen out of the success which attended a similar undertaking on a smaller scale at Norwich in 1881.

Mr. Southwell was a true prophet when, describing the Norwich Exhibition in 'The Zoologist' for that year (p. 249), he said that it had proved such a success in all respects that there could be little doubt it would be speedily followed by similar exhibitions in other parts of the country. His prediction is now to be verified in the International scheme which is on the eve of completion, and which has already assumed a magnitude and importance which will eclipse everything of the kind hitherto attempted.

The inauguration has been fixed for the 12th of May, on which day the Exhibition will be opened by Her Majesty the Queen in person, and we understand that from that date the public will be afforded admission daily for six months.

Few people require to be informed, unless they be visitors from a distance, that the site of the Exhibition will be the Horticultural Gardens at South Kensington, lying between the Albert Hall, in the Knightsbridge Road, and the new Natural History Museum which faces Cromwell Road. Here a mass of temporary buildings have been erected, which, although of plain and unattractive exterior, are internally decorated with taste, and appear admirably suited to the purpose for which they have been designed. At the same time it has been wisely decided to leave untouched the most ornamental portions of the grounds, where,

during the summer months, visitors will be able to enjoy the shade of surrounding foliage, and a freshness from the neighbouring fountains, while they listen to the strains of music which will be discoursed from the two newly-decorated band-stands at opposite ends of the grounds.

Seeing the important commercial interests which are involved in all that relates to national fisheries, it is of course only natural that the enormous collection of exhibits which have been brought together at South Kensington from all quarters of the globe should be primarily of a kind to illustrate the various methods employed by different nations for capturing fish of every description available for food. Accordingly, in the scheme of classification which has been prepared, we note that the largest and most important collection of exhibits will be found in Class I., which comprehends fishing gear of all kinds, including boats, punts, trawls, dredges, nets, lines, and hooks of every description. The objects in this class have been grouped in two sections, according as they relate to "sea-fishing" or "freshwater-fishing," and will be found systematically arranged as follows:—

Class I.—FISHING.

Section 1.—SEA FISHING.

1. Gear of every description and of all nations used in Trawl, Herring, Long-line, Hand-line, and every other mode or system of Fishing, including all Nets, Lines, Hooks, Harpoons, Tackle, &c., employed in the same.
2. Oyster Dredges, Crab, Lobster, Prawn, &c. Pots, and other appliances for catching fish of this description.
3. Fishing Craft of all nations; Models and Representations of the same.
 - (i.) Steam Fishing Vessels and Steam Carriers.
 - (ii.) Fishing Vessels and Boats other than Steam Vessels.
4. Ropes and Canvas suitable to Fishing Vessels.
5. Steam and Hand Capstans, Compasses, Barometers, Telescopes, Lights, Lamps, Fog-horns, Systems of Signalling at night for Fishing Fleets and Vessels, Electric Lights, Luminous Paint, and other equipment of Fishing Vessels, Charts for Fishermen.
6. Models of Harbours, Piers and Slips, for fishing purposes.
7. Fishing Tackle and Netting in different stages of preparation, and Machinery used for working up the raw material.
8. Life Boats, their equipment, and life-saving apparatus of every description.

9. Appliances and methods for breaking the force of the sea at the entrance of Harbours and elsewhere.
10. Methods of communication from the shore to Lightships and Fishing Fleets by Submarine Cables; Telephone or other means of Signalling.
11. Methods of protecting Submarine Cables from injury by Fishing Operations (illustrated by Models and Drawings).

Section 2.—FRESHWATER FISHING.

1. Salmon Nets and Fixed Appliances for catching Salmonidæ in all their varieties.
2. Salmon Rods, Reels, Lines, Artificial Flies and Baits, Gaffs, Spears, Creels, &c.
3. Trout Rods, Reels, Landing Nets, Lines, Artificial Flies, Baits, Baskets, Bags, &c.
4. Pike, Barbel, and other Coarse-Fish Rods, Reels and Tackle, Artificial Spinning Baits, &c.
5. Traps, Nets, Bucks, Wheels, and all kinds of apparatus for catching Eels, Lampreys, &c.
6. Hooks, &c.
7. Anglers' Apparel of every description.
8. Boats, Punts, Cobbles, collapsible, portable, &c., in models or otherwise.

Class II. relates to what may be termed the present equipment of fishermen, and in this the visitor will find not only such articles as sea-boots, wading-stockings, "guernseys," "oileys," and apparel of every description, but also models of plans of dwellings, and forms of contracts for partnerships, and insurances of boats and gear.

In Class III. we find exhibits relating to the preparation and preservation of fish, and the various modes of transport, with models of fish-curing establishments and fish-markets, thus arranged :—

Class III.—COMMERCIAL AND ECONOMIC.

1. Preparation, Preservation, and Utilisation of Fish, and all forms of life included in Class V.
 - (a) For edible purposes—
 - i. Models of fish-curing establishments. Methods of, and models and other representations of any appliances for, drying, curing, salting, smoking, tinning, cooking, &c.
 - ii. Fish dried, smoked, cured, salted, tinned, or otherwise prepared for food.

- iii. All products prepared from fish, such as oils, roes, isinglass, &c.
- iv. Antiseptics suitable for preserving fish for food.
- (b) For other than edible purposes—
 - i. Oils, manures, and other products prepared from fish.
 - ii. Methods of, and models and other representations of appliances for, preparing oils and manures from fish.
 - iii. Sea and fresh water pearl shells; mother-of-pearl manufactured; pearls sorted.
 - iv. Preparation and application of sponges, corals, pearls, shells, and all parts and products of aquatic animals, &c., to purposes useful and ornamental, with specimens.
- 2. Transport and Sale of Fish.
 - (a) Appliances for carrying fish and for preserving fish during transport or otherwise, and models of the same.
 - (b) Models of fish markets, and appliances connected with the same.

From an educational point of view this is a highly instructive series, and the objects comprised in the present section of this class deserve to be attentively examined.

The steps which have been recently taken by a newly-formed Association for the advancement of fish-culture in the United Kingdom will have paved the way for a thorough appreciation of the various interesting objects exhibited under the head of "Fish-culture" in Class IV. Not only members of the association referred to, but all who are interested in promoting sport for anglers, in securing an increase of food supply by cultivating the kinds of fish best suited to British waters, or in contributing to an amendment of our fishery laws, will do well to examine carefully the various models and drawings in this class, which are thus arranged:—

Class IV.—FISH CULTURE.

- 1. Models or Drawings of Fish Hatching, Breeding, and Rearing Establishments, including Oyster and other Shell-fish Grounds, and all Apparatus and Implements connected with the same and for transporting Fish and Fish Ova. Food for Fry.
- 2. Representations illustrative of the Development and progressive Growth of Fish.
- 3. Models and Drawings of Fish Passes and Fish Ladders.
- 4. Scientific Investigation.
 - i. Models and drawings of diseases of fish, with special reference to their origin and cure.

- ii. Processes for rendering streams polluted by sewage and chemical or other works innocuous to fish-life (illustrated by models and drawings).
 - iii. Physico-chemical investigation into those qualities of salt and fresh water which affect aquatic animals; investigation of the bottom of the sea and of lakes, shown by samples; aquatic plants in relation to fishing, &c.; researches into the aquatic fauna (animals of the several classes preserved in alcohol or prepared, &c.); apparatus and implements used in such researches.
5. Acclimatisation of Fish.

These are all very important subjects, perhaps none more so than that which relates to an investigation of the causes of disease in fish and the means of cure. For the best essay on this subject a special prize has been offered, which it is to be hoped will so far stimulate research as to lead to valuable practical results.

We need not now refer to the subjects of other essays for which prizes will be given, for under the conditions long since published by the Executive Committee all competitors are required to send in their MSS. by the 1st May. On a future occasion, should the accepted essays be printed, we may hope to refer to them in detail.

If one class of exhibits more than another can be said to have a special attraction for naturalists, it is Class V., which contains living representatives and preserved specimens of both marine and freshwater animals and plants. Specialists will find their favourite groups here represented under natural conditions, and, from the names of some of the exhibitors which have already reached us, it may be anticipated that many of the collections will be extremely good ones.

It should be observed that up to the date of penning these remarks the exhibits in this Class were not on view, nor were the arrangements for displaying them completed. Hence it has not been possible to furnish our readers, as we should like to have done, with detailed descriptions of the more interesting objects, the nature of which may be inferred from the following list:—

Class V.—AQUARIA.

1. Specimens, Living (Marine and Fresh Water), Fresh, Stuffed or Preserved, Casts, Drawings, and Representations of—
 - a. Algæ to be arranged under genera and species, with localities appended.
 - b. Sponges, in their natural state.

- c. Corals, in their natural state. Polypes, Jelly-fish, &c.
- d. Entozoa and Epizoa.
- e. Mollusca of all kinds and Shells not included in Class III.
- f. Star-fishes, Sea Urchins, *Holothuræ*.
- g. Worms used for bait, or noxious; Leeches, &c.
- h. Perfect insects and larvæ of insects which are destroyers of spawn or serve as food for fish.
- i. Crustacea of all kinds.
- k. FISH OF ALL KINDS.
- l. Reptiles, such as Tortoises, Turtles, Terrapins, Lizards, Serpents, Frogs, Newts, &c.
- m. Aquatic and other birds hostile to fish or fishing.
- n. Aquatic and amphibious Mammalia (Otters, Seals, Whales, &c.), and others detrimental to fish.
- 2. Works on Ichthyology. Maps illustrating Geographical Distribution, Migration, &c., of Fishes and Spawn.
- 3. Specimens and Representations illustrative of the Relations between Extinct and Existing Fishes.

In this class we believe there will be exhibited a fine collection of sponges from Greece, and some remarkable Italian corals; while we are given to understand that both the Mollusca and Crustacea will be well represented by carefully selected and well-arranged specimens.

The Naples correspondent of the 'Daily News' informs us that one of the most notable features in this Class will be a collection of marine animals contained in 350 glass jars, and forwarded by Dr. Dohrn, Director of the Naples Zoological Station. This collection (which up to the moment of writing had not arrived) is thus described:—

“By new methods adopted in preservation the most delicate organisms are immortalised in spirit, with little or no loss of their original beauty of form. In one bottle you see a small, indistinguishable lump of animal substance, which is, or rather was, a pretty *Acyonium*, or Cork-polype; in another, the same animal fully expanded in all its delicate transparency, and covered with the little polypes that look like tiny flowers. In another receptacle you see a kind of shrunken soft tube with a few tentacles hanging out of it that look like wet feathers; it is a *Pennatula*, or Sea-feather. These and other animals are so sensitive when alive, that if the water of the tank in which they live be merely shaken, or in some cases if only a cloud darkens the light, they at once shrink up. The method adopted to

kill them while in their beautiful expanded state has been termed 'fulmination,' for it is so instantaneous that the animals have no time to draw in their tentacles.

"Among the exhibits, all of which are from the Gulf of Naples, first must be mentioned the Siphonophores, or Siphon Jelly-fish. The Siphonophore, as beautiful as fragile, is a colony composed of very differently-formed individuals. Some are polype-like feeders, who provide the nourishment; others are Medusa-like swimming-bells, and others again are real *Medusæ*, which undertake the business of propagation, the whole being inseparably united. There are also specimens of Jelly-fish, which when alive pulsate their pretty bells, fringed with coloured tentacles, through the water. There are young specimens of the so-called 'Venus-girdles,' one of the free-swimming Hydrozoa. When alive, the iridescent light running in waves along the edges of these ribbon-shaped animals, caused by the rapid vibration of innumerable delicate oar-plates, is very beautiful. There are specimens of different kinds of *Salpæ*, delicate creatures of a barrel-shape, which are remarkable for their curious mode of reproduction.* Then there are Heteropods, or Keel-snails, small wonderful crystalline animals, among which the *Pterotrachea* and elegant *Carinaria* deserve special notice. Among the specimens of large mollusks are Squids, semi-transparent creatures, like winged arrows, which when alive dart to and fro with great rapidity, and are so excitable that they constantly change colour, seeming to blush rosy-red when startled. There are small Octopods, and a specimen of the very rare Paper Nautilus (*Argonauta argo*), with its transparent shell. We also find annelids, or marine worms, some with a delicate spiral crown of feathers issuing from a tube [like *Serpula vermicularis*]; others leaf-shaped, as the Planarians, which are very difficult to preserve, and the beautiful *Aphrodita aculeata*, or Sea-mouse. This does not look like a worm at all, and has its toilet carefully made before being put into spirit, for its prickly coat has been well brushed to rid it of sand and mud in order to show its beautiful metallic rainbow colours. Sea Urchins and Star-fish are not wanting, and the collection includes Sea Anemones, beautifully preserved, with all their tentacles extended. There are various species of Crustacea, including several of the *Amphipoda* (to which division belongs the well-known Sand-hopper, *Talitrus locusta*, Linn.), the transparent Pelagic Crab, *Phronima*, a finely preserved lobster with its colours quite bright, and a Mantis-shrimp, or Grasshopper-crab. Several fine kinds of Sponge; several specimens of pretty *Polyzoa*, like pieces of delicate white net; various Snails; and the remarkable *Holothuria tubulosa*, a Sea-Cucumber, with its

* In the genus *Salpa* the young are produced by gemmation in chains, consisting of individuals unlike the parent, and becoming oviparous, the alternate generations only being alike.—ED.

inmate the *Fierasfer acus*, a delicate little fish which lives in its body.* There are many kinds of Mediterranean fish (including the *Argyropelecus*, or Silver-axe, a beautiful little fish in a separate bottle), but, for economy of spirit and space, only small specimens. Last come the specimens of embryo Dog Sharks, issuing from the egg with their yolk-bags attached; and there is a bottle with young true Sharks, about a foot long, nearly as useful for scientific purposes as the adult animals of ten feet long."

The Aquarium in the western corridor, illuminated by Messrs. Siemens with the electric light, will doubtless prove one of the greatest attractions to visitors. The tanks, requiring of necessity to be built very substantially, will remain permanently in position after the Exhibition is closed, and in all probability will form the finest aquarium in the metropolis. Many of the tanks are of considerable size, twenty of them holding 1600 gallons of water, and four of them 2000 gallons. Fast-swimming fishes will thus have sufficient room to display their powers of speed, while the increased transparency of the water afforded by the electric light will enable visitors to view with great clearness all the graceful movements and delicate colours of the polypes and jelly-fish.

Besides the numerous examples of living fish in the tanks, there is a very extensive collection of stuffed specimens, many of them extremely well preserved; and, as the owners in many cases have affixed to the cases particulars of weight and measurement, anglers will have an excellent opportunity of comparing notes and judging of the merits of their own trophies. In the Canadian Section, which contains a large series of stuffed fishes and aquatic birds, will be found an enormous salmon which weighed 79 lbs., exceeding by 9 lbs. the largest ever taken in the Tay. Of the Scotch monster Frank Buckland made a cast, which may be seen in his collection of models and casts at the end of the main

* The genus *Fierasfer* is characterised by the entire absence of the ventral fins and by having the vent under the throat. The dorsal fin extends the length of the body, and the tail, with no separate caudal fin, tapers to a point. The species referred to has the singular habit of penetrating into the respiratory cavities of the Holothurians, or Sea-Cucumbers, and also into the bodies of Star-fishes. Prof. Seeley, referring to this habit, says:—"The nature of this strange relationship between animals so unlike in their habits is at present unknown, and though the fish is probably seeking food, the instinct is so remarkable that the history of its development is looked forward to with interest."—ED.

gallery. This gallery, by the way, which faces the visitor on arriving at the principal entrance, and is devoted entirely to British exhibits, is 750 ft. in length, 50 ft. wide, and 30 ft. at its greatest height—the finest gallery in the Exhibition.

Next to Great Britain, Canada and the United States have the largest spaces allotted to them, and the collections in both these sections promise to be of an unusually interesting character. As one of the Horticultural Gardens' ponds is in the rear of the Canadian section, it is proposed to have an Indian afloat in his birch-bark canoe to show his method of paddling and steering, as well as of spearing fish; and Professor Brown Goode, one of the U. S. Fish Commissioners in charge of the American collections, has brought over a model fisherman's hut, which is to be erected in his department. Visitors will thus have presented to them, in the most realistic manner, scenes of daily life in the far North-West, and will see before them almost at a glance the fisherman's home, his boat, nets, spears, hooks, and other implements, as well as specimens of the fish captured. Sweden and Norway, to which countries a considerable space has been allotted, send similarly instructive proofs of the importance which is attached to their national fisheries.

Next to these in point of size, the area covered by Belgium and the Netherlands is pretty extensive, far exceeding that occupied by Germany, which, strange to say, is one of the smallest sections in the Exhibition. Considering the proximity of Germany to England, and the facilities for transport as compared with the carriage of collections from India, China, Japan, and Tasmania, visitors will doubtless be surprised to find Germany so inadequately represented.

The collections from China and Japan are of a very unique kind, and for many people will probably have a greater attraction than any others in the Exhibition. The models of trading-junks, fishing-boats, rafts, river-side houses, all built to scale, with model oyster-beds, stake-nets, and every kind of tackle used by Chinese and Japanese fishermen, will well repay prolonged examination. Two native artists, a carpenter and painter, who came over with the collections, have been busily employed since their arrival in decorating the building allotted to them with carvings and frescoes of native design, the effect of which is very quaint, yet quite in keeping with the character of the native collections.

We may here briefly refer to the last two classes of exhibits, namely :—

Class VI.—FISHING—FISHERY LAWS—FISH COMMERCE.

1. Ancient Fishing Implements or their Reproductions—Models—Pictures—Books—Emblems—Charters and Seals of Ancient Fishermen Guilds.
2. Fishery Laws of different Countries.
3. Copies of Treaties, Conventions, &c., dealing with International Fishery Relations.
4. Reports, Statistics and Literature of Fish, Fishing, and Fisheries.
5. Reports on Acclimatisation of Fish, and of Attempts in the Direction.

As regards the exhibits in this class we have yet to learn what facilities will be afforded for enabling visitors to derive profit from them. It is clear that one cannot peruse a charter, or code of fishery laws in the same space of time that one would look at a trawl-net, or examine a model oyster-bed, while the incessant interruption from passers-by would render any attempt at study hopeless. Unless, therefore, some provision be made in the shape of a quiet reading-room to which, under proper restrictions, maps, charts, books, or reports may be carried for reference, we do not see that the formation of this class of exhibits will lead to any useful result.

Class VII. is devoted to Loan Collections, some of which—such as Lady Brassey's Collection of Corals—are said to be quite unique of their kind.

As our object, however, is not to write a detailed catalogue of the contents of the Exhibition, but merely to direct attention to such features as are most likely to interest the readers of 'The Zoologist,' we must pass on to the Gardens, or rather to such portions of them as remain uncovered by buildings, in order to point out the animal-life which may be seen there.

The notion of exhibiting living specimens of piscivorous mammals and birds in connection with a Fisheries Exhibition shows how comprehensive has been the scheme of the Directors, which enables the public to see not only the many and varied contrivances which man has designed for fishing, but also to study the appearance and actions of some of the natural enemies of fish in the shape of Seals and Otters, Cormorants, and other waterfowl.

These will be found in the ponds of the Horticultural Gardens, where the visitor, when weary of examining the wondrous resources of art within the buildings, may turn to the contemplation of nature without, and experience a new sensation of freshness and repose.

The Exhibition, as we have said, will be opened on May 12th, and, the executive work being in the hands of a skilled and experienced staff, its success may already be safely predicted.

ON THE BREEDING OF THE PINE MARTEN IN CAPTIVITY.

By A. H. COCKS, M.A., F.Z.S.

So far as I have been able to ascertain, there is no instance recorded of the Pine Marten (or other species of the genus) breeding in captivity; and but little appears to be known concerning its reproduction in the wild state, for in no book that I have met with is mention made of the remarkable difference in the colour of the young when first born, which surely would have been noticed had the fact been known.

An adult female Pine Marten sent to me from Cumberland in May, 1876, had for the last two, if not three, years shared a cage with a male of the same species, without showing any signs of breeding, until at about 11 p.m. on April 7, 1882, I heard the unmistakable whimpering, or squealing, of young ones proceeding from one of the bed-boxes in this cage; I had fed the Martens about six o'clock, and feel certain that no young were then born. I at once shut off the male animal, not knowing how he might treat the youngsters. On the morning of the 10th I ventured to take out one of the young. It was about six inches long, including the tail, which was about, or nearly, $1\frac{3}{4}$ inches long, and appeared out of all proportion in so young an animal, and was in shape, and, in proportion to the head and body, like that member in an adult Stoat. It will, I believe, be a surprise to others, as it certainly was to me, to learn that this species is at first quite *white*; the coat being, of course, fine and short.

On the 14th I again looked at the young, and found them to be three in number—two males and one female. They were now getting grizzled, like very young Polecat Ferrets; coats

longer and rougher than before, and bodies heavier and stouter, but not perceptibly longer than on the 10th. Certainly if I had met with these cubs without knowing their parentage I should not have guessed them to be Pine Martens; but should have been inclined to suppose they were young Polecat Ferrets, or, perhaps, chiefly in consideration of their tails, young Stoats, with the young of which species I am unacquainted.

On the 18th the cubs were shifted by their mother to the other bed-box, probably in consequence of my having disturbed them; I was obliged also to go into the cage at least once a day to attend to the male, which I had shut into a smaller cage enclosed in the other, and also to two other Martens in a cage beyond, to which the only access was through the cage tenanted by the nursery party. The mother is an exceptionally shy specimen, and these constant visits, and also, perhaps, the close proximity of the other Martens, kept her in a restless state, and on the evening of the 22nd I saw her with one of the cubs in her mouth; and on May 3rd, on going into the cage to clean it out, I found one of the young ones lying almost dead on the top of one of the bed-boxes, where it must have been carried and left by the mother. I took it indoors immediately, and carefully warmed it; but it was too much exhausted to swallow milk, and died an hour and a half later. I have preserved it in spirit; it was a male, length $10\frac{3}{8}$ inches.* The following evening I put some fresh straw into the cage, which had the effect of frightening the Marten; and, taking one of the cubs out of the box in which it was, she carried it behind a box out of sight, and presently let it fall on to the ground, a drop of about five feet. However, no bones were broken, and I replaced it in the box with the other cub, and fortunately had no further disaster. The eyes were still closed. I left home the next day (the 5th) for a fortnight, during which interval they acquired the use of their eyes.

On the 25th one of the cubs showed itself for the first time, trying to climb out of the bed-box, and calling loudly.

On the 29th the mother took three young Greenfinches which I gave her, and tried to induce the young to eat, uttering a peculiar chuckling or clucking noise. The cubs made repeated efforts to get out of the box, with a view of finding a place where

* Nose to eye-slit, $\frac{3}{4}$ inch. Eye-slit to ear, $\frac{3}{8}$. Head, 2. Neck and body, $5\frac{3}{4}$. Tail, $2\frac{1}{2}$.

they could eat by themselves, but were each time pulled back by the mother. One cub, however, at length succeeded in getting out, and ate and growled in a most satisfactory manner. The next day the cubs had a scrimmage over eating a Sparrow, and one or both came out.

On June 5th, one of the cubs being out, scrambled back into the box, which is rather more than a foot high, by helping itself up by the wall, which formed an angle with the side of the box, and by the next day was able to *jump* on to the top of the box.

On the 23rd they made, I believe, their first descent to the ground—having been born at a height of nearly five feet above it—by means of a carefully-arranged inclined plane, or “chicken-ladder.” I first actually saw them do so on the evening of the 25th.

On July 2nd, being the anniversary of the date on which I had measured the young Marten the previous year (*cf.* ‘Zoologist,’ 1881, p. 333), I endeavoured to measure the young male, but it proved so extremely fractious, that I could not succeed in measuring it even as accurately as on that occasion. It was, however, just about the same size, or if anything slightly larger, than those cubs at that date; I therefore think my estimate of the age of the former couple was pretty correct, as the fact of having been taken from their mother when quite small, and possibly not very suitably fed by the shepherd before they were sent to me, and then the journey, would be likely to throw them back somewhat, and slightly retard their growth.

The young Martens were quite full grown by the autumn, and are still flourishing; I regret that I am unable to state the length of gestation, but may hope for “better luck” if there should be a “next time.”

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from p. 114.)

HAVING given an outline of three different styles of cage, leaving all possible amplifications and modifications to the taste and discretion of the amateur, we may now inquire what serpents are to be selected for confinement in each, where they are to be got, and how to get them.

Nothing is easier than to draw up a list of a hundred reptiles, "highly commended" for the purpose; few things would be more difficult than to obtain them. Obviously, every snake on earth might be allotted as "suitable" to one or another of these three cages, but, with the exception of a few species, the number that reach our national menageries, let alone the vivaria of private collectors, is incredibly small. Dr. Günther classifies about four hundred species, including many varieties, of colubrine snakes alone. Not above one-fifth of these have been seen alive at our own Zoological Gardens—the best-stocked reptilium in Europe—and not more than one-twentieth at any one time; while of the majority of specimens composing this inconsiderable section it may be said that the offer of a hundred guineas might not produce another in ten years. Yet many of these are far more plentiful in the countries they inhabit than grass-snakes are with us, and the same obstacles to capture and transmission cannot be alleged against them that exist in the case of fish or insects. No doubt many that are taken uninjured do die from cruelties inflicted on them or want of care in transport; but beyond this and the horror with which the tribe in general is regarded in all countries, there seems to be an amount of selective and individual prejudice, which it is to be hoped that a more widely-diffused recognition of vulgar errors, as the progress of ophiology reveals their nature, will subdue. Snake-catchers in India will bring in cobras and pythons; the Cingalhesse rat-snakes; and the Indians of Brazil net and lasso boas, anacondas, and rattlesnakes without hesitation, but the hundreds of other serpents, venomous and innocent, which are found in these lands, and for which the dusky trappers would receive a better price, seem to be protected by some atmosphere of special mysterious dread which surrounds them. The so-called two-headed snakes—in reality harmless amphisbœnas—which are as common as earthworms in nearly every tropical and subtropical part of the globe, and of which there are numerous varieties, either inspire so much terror, or are so entirely disregarded, that they are scarcely known in zoological gardens, and are comparatively rare even in museums.

Therefore, although I am about to append a list, the essential part of my advice to the reader on this head must be, Take whatever you can get, and be thankful! I know from experience that one may live long in a country, and have many agents professedly

on the *qui vive*, without being able to obtain particular reptiles, and that the maxim is not without force of application however one may be situated. Even in this enlightened land it is generally easier to go and catch an adder than to find an opportunity of purchasing one ready caught; here, however, imported produce is perhaps more abundant than home material.

The names subjoined are those of snakes which the student will be able to buy sometimes from dealers and menageries on the Continent (rarely here, with the exception of one or two species), more probably than other kinds; or which may be procured for him by friends in the several parts of the world indicated, where the species mentioned are those to be met with most frequently. As a possible assistance in the quest, I give local or vernacular names when I know them, though, as was said in the first chapter, they are of little value; the authors whose nomenclature is quoted will supply descriptions. The collector may feel assured that he will at all times be able to procure *some* that are contained within this category, and that any one of them may come under his notice, if he prosecutes his inquiries in the right directions, at any time. But, bearing in mind the impediments that are detailed above, he will scarcely hope ever to possess all of them; still less would he exclude any not herein set down which might present themselves to him.

The owner of the large heated den, of which we first discoursed, will naturally look out for reptiles befitting its magnificent proportions—though small ones would by no means complain of extra-spacious accommodation. The greater constrictors—the boa, python, and anaconda—suggest themselves; serpents which are fortunately not only tolerably easy to obtain, but which do fairly well in confinement, and evince a higher degree of intelligence, viewed in the light of pets, than most reptiles, being in this respect amongst snakes what the dog, the horse, and the elephant are amongst mammals. Of these the cheapest, hardiest, and most readily procured is the West African Python (*Python sebae*), sometimes called the African Boa. (For the genus and species of these very common snakes I need give no authority, since they will be found in all books at the head of the synonymy.) Almost all dealers in animals keep this article “in stock”; Cross of Liverpool, Jamrach, and others supply small specimens, four or five feet long, for twenty-five or thirty

shillings apiece. Above that length the price increases at the rate of about one pound per foot. These are the snakes almost invariably exhibited by itinerant *dompteurs* at continental fairs, and in travelling vans and menageries. They seem, more than any others, to be exported in large quantities from their habitat, and many of the European Zoological Gardens contain a great number; in that at Antwerp they comprise nine-tenths of the occupants of the Reptilium, some being very fine examples. Fresh supplies are constantly arriving, the surplus being weeded out every now and then and sold by auction. A lot of young ones were born there some years ago; I bought five of them, and found them to get on remarkably well, except one which died of a tumour in the head when it had grown to a length of about eight feet. They usually become very tame, with proper treatment, and feed voraciously; and will endure a lower temperature and show more activity than any other serpent of this class. The thickest (though not the longest) snake at Regent's Park is a West African Python, not taking into account a fictitious girth which it owes to an internal rupture at one part; it is about fourteen feet in length, and has been there nineteen years. Specimens are still alive elsewhere which have been in confinement over twenty years.

The Indian Python, or Rock-snake (*Python molurus*), is another hardy reptile frequently offered for sale, but is not to be purchased so cheaply as the other, and is frequently persistently savage; Jamrach receives large consignments of this species. Both these snakes have been known to incubate in our London Zoological Gardens. There are several other Pythons more rarely met with; a most eligible species is the Royal Python (*P. regius*), a quiet and docile creature, which, from the habit it displays of lying *folded up*, so to speak, has acquired the name of "ball-snake." Several ladies of my acquaintance keep pet specimens of the Royal Python—which I have known a dealer to sell as the commoner West African variety. Snake-vendors are not as a rule deeply versed in nice herpetological distinctions; and since *caveat emptor* is their unvarying motto, it is only just that the balance should occasionally come out in favour of that personage. The Reticulated Python (*P. reticulatus*) of Borneo and other parts of the East, is a valuable and delicate species; two hundred guineas have been offered for the large one at the

Zoo, which is twenty-five feet long and weighs over sixteen stone.

The common Boa (*Boa constrictor*), inhabiting South and Central America and the West India Islands, is the next most available subject to become a denizen of our big cage. Its beauty of hue and pattern, which impelled Laurenti to name it *Constrictor formosissimus*, far exceeds that of the last genus, but it is not so hardy. It is readily tamed, those of a light ground-colour being generally quieter than those which exhibit a deeper red, while the latter perhaps feed better; among all kinds of snakes different idiosyncracies of temper are shewn by individuals, whatever the prevailing characteristics of the race may be. The Boa is viviparous, and has bred in captivity more than once; several of the celebrated brood of June 30th, 1877, at the Zoological Gardens fell to my share. One only survives at the present time; she is as tractable and inoffensive as the guinea-pigs and rabbits upon which she feeds, and is so free from nervousness that a child might play with her—and does, very often. Boas and Pythons are both liable to tumours, which will be described in a subsequent chapter among the other diseases incidental to ophidian flesh. Common Boas are sometimes advertised for sale under the title of Harlequin Snakes; if purchased at a naturalist's emporium they will cost from two to ten pounds each, according to the size, but the people who bring them home to sell do not receive a fifth of that price for them from the directors of menageries. They may be bought in the market-places of most of the cities on the sea-coast of South America, secured in wicker baskets; ranging between half a yard and twelve or fifteen feet, and priced accordingly (when the demand has been gradually and vociferously reduced from its original exorbitance to the lowest point) from two shillings to twenty. *Jiboya* is the native name. A poor starved little Ribbon, bought in Pernambuco when it was not much over a foot in length, now measures nearly five, and is as thick as my arm.

The Peruvian and King Boas (*Boa eques* and *imperator*) and three Tree Boas (*Corallus hortulanus*, *Epicrates cenchris*, and *Epicrates angulifer*), all hailing from tropical regions in the New World, are rare, but are now and then met with as "dark varieties" in the lists of dealers, or in the hands of those who catch them. The Madagascar Boa (*Pelophilus madagascariensis*,

Duméril and Bibron), fierce but handsomé, is rarer still. The Jamaica Boa or Yellow Snake, *Chilobothrus inornatus* (Reinhardt), is common enough in that island, and tolerably well represented in collections; at Regent's Park it has been bred, and has crossed with the Pale-headed Tree Boa. It grows to no great size, and is a spiteful brute, but it will usually feed and thrive.

Thirdly, we have the Anaconda or Water Boa (*Eunectes murinus*), also a native of tropical America; it is known as *kamudi* in Guiana and *succurhuba* in Brazil. Since specimens have been killed which have been measured between thirty and forty feet in length, it seems probable that this constrictor attains a larger size than any other member of the serpent tribe. Its partiality for water is well known, and in confinement it will be found to lie in the tank more than half the time; when out of the water it is generally very restless. Although extremely savage when first caught, it soon becomes tame in the majority of instances, and has been known to evince marked discriminative affection towards particular people; tolerably hardy, though of capricious appetite, and bearing captivity well, it is a grand creature, with its glittering golden scales relieved by circular black spots, and is possessed of immense strength. This is the snake to ferret out all the chinks and spaces into which it can shove its blunt nose, and to test the weak places in a cage. When it is at home it costs rather more than its near relative the Boa, and the price would, I should think, bear a somewhat proportionate increase on this side of the Atlantic. A large Anaconda has been kept at the Zoo for eighteen years, and is in good health at the present time.

Still, snakes are luxuries for which there is no great demand, and those who have them for sale are as a rule very glad to get rid of them, whatever the species may be, for a reasonable sum—something under a five-pound note—unless the size renders them of additional market value as objects of curiosity for exhibitions. There is no definite tariff for rarity, nor indeed is it taken much into account; and the price of *any* snake under six feet will not be ruinous. With these constrictors, as among rapacious birds, the female is rather larger than the male. No difference in coloration between the sexes which can be reduced to any law has been observed, even in the most variable species, but the

male serpent can always be distinguished by the presence of two hooks upon the under surface, a cast of which is visible in the slough.

Many of the Australian snakes are of especial interest, but unhappily very few reach our shores alive, owing to the protracted voyage. Two members of the *Boidæ* belonging to that country would be eminently suitable for the cage we are considering—the Diamond Snake (*Morelia spilotes*, Lacépède), and the Carpet Snake (*Morelia variegata*, Gray). Certain large Colubers would appear to advantage there, too, notably the so-called Rat-snakes from Ceylon or India and South America, which grow to ten or twelve feet, but are much more slender than pythonoid serpents of a corresponding length. They eat frogs, small rats, and birds. The former (*Coryphodon blumenbachii*, Duméril and Bibron), of a silver or pale olive colour, is the easier to tame; the South American one (*Spilotes variabilis*, Wagler), also called the Wasp-snake, presents a shining black, barred with yellow, the two colours varying enormously in their proportion and arrangement in different individuals, and is a pretty and curious reptile. Neither is uncommon, the Ceylon variety, however, being brought to Europe in much the greater quantity; I was once offered over a dozen for five shillings apiece by an English dealer, who had received a large box full in the depth of winter. Both have singularly flattened necks, and the South American species produces a rattling noise by quivering its tail upon the ground when it is excited. The bite of these Rat-snakes is insignificant compared to that of constrictors of an equal length, since their mouths are so much smaller; but the *Boidæ* are more to be recommended to the amateur, as feeding better, healthier, more docile, and displaying a higher degree of character.

For the smaller heated cage, with the reservoir underneath, it may be said that any snake of a size proportionate to its dimensions is suitable to it, since none of those which inhabit the higher latitudes and thrive in a temperate climate object to a little more warmth. All those, therefore, which are mentioned in the third class may be considered applicable to this as well; some, too, which get through the hottest summer months here comfortably enough without artificial increase of temperature will require to be kept in such a cage during the rest of the year; some need a little extra heat to induce them to feed; while it is

obvious that the cage may be used instead of the third for hardy snakes without any hot water at all, or that this may be supplied only when the thermometer indicates its necessity. It must be remembered, however, that the species which demand heat demand it constantly; and that although the degree may somewhat vary, it will not do to keep them before the fire all day and simply cover them up at night. An incomplete arrangement of this sort generally results in their being kept in darkness a great portion of their time, which is not only bad for their health, but makes them wild and nervous when disturbed.

Small specimens of all those named above will do very well for cage number two, with plate-glass for constrictors. There are two of the constrictive colubrine serpents which, though they grow to six feet or more, are most frequently met with of a length which adapts them to this place of confinement; the Four-rayed Snake (*Elaphis quater-radiatus*, Duméril and Bibron), largest of European ophidians, common in Dalmatia, but occurring in most of the countries bordering the Mediterranean, a very pretty and gentle creature; and the Robben Island Snake (*Coronella phocorum*, Günther), from South Africa, plentiful enough in its native isle, but much more difficult to obtain here than the Four-rayed. It is of a glowing, burnished dark-brown colour—almost black, in fact; always ready to attack, and rarely tamed; and with such a voracious appetite that it ought always to be separated from its fellows at feeding-time, as it will hold the animal it has just killed in its coils while it endeavours to despoil the other snakes of their prey.

Whip and other tree-snakes have already been suggested, in connection with a plant. Curious and beautiful reptiles, they are very delicate and capricious in diet, but have great tenacity of life under abstinence. The brilliant-green *Philodryas viridissimus* (Wagler) of South America, the Carolina Coach-whip Snake (*Herpetodryas flagelliformis*, Catesby), and various members of the genera *Dendrophis*, *Ahoetulla*, *Langaha*, *Dryiophis*, and *Passerita* may occasionally be procured, but are all rare. Much the same must be said of many of those exquisite, vivid-hued serpents which often literally swarm in their habitat, and which are almost always lumped collectively together as “coral” snakes in local nomenclature; the blood-red *Scytale coronatum* (Dum. and Bibr.), the scarlet and black *Erythrolamprus venustissimus*

(Boie), and the symmetrically-patterned yellow, vermilion, black and white species of *Oxyrhopus*—*formosus*, *doliatus*, *petolaris*, and *trigeminus* (Wagler). The Bead Snake (*Simotes coccineus*, Latreille), which Audubon calls the Harlequin, and which is common in North Carolina and other parts of America; *Leptodeira annulata* (Shaw), from the Isthmus of Panama; *Leptodeira rufescens* (Fitzinger), the absurdly-maligned “night-adder” of the Cape of Good Hope; and *Carphophis amæna* (Dum. and Bibr.), the Crimson-bellied Snake of Pennsylvania—all exhibiting more or less gorgeous coloration, may not improbably come in our way, and can be kept alive with little trouble. There is another reptile which will get on very well in a case of this description, either alone or with serpents; for, though named the Glass Snake, it does not belong to the Ophidia at all, being in reality a legless lizard like the slow-worm. It ranks among the *Zonuridæ* family, and is classified by Oppel as *Pseudopus pallasi*. Found in Dalmatia and other parts of Southern Europe, it can frequently be bought in this country, and most collections of living animals are likely to have duplicates for exchange. It is a singular and inoffensive creature, easily fed on dead mice, slugs and snails, and owes its designation to the extreme brittleness of its thick, ribbed body. One died recently at the Zoological Gardens which had been kept there nearly twenty years.

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

BY JOHN T. CARRINGTON, F.L.S., AND EDWARD LOVETT.

(Continued from p. 72.)

Galathea nexa, Emb.

This species, as stated by Prof. Bell, partakes of some of the characteristics of *G. squamifera* and *G. strigosa*, for it resembles the former in the absence of spines in the hand, and the latter in the comparative length of the external pedipalps. Its cephalothorax is somewhat oval in shape, and broader than the abdominal somites. The anterior pair of legs are very hairy, and the remaining ones armed with sharp-pointed claws. Its colour is brown.

Galathea nexa is a deep-water species, and is by no means common. It has been obtained from the coast of Down and Antrim; from Loch Fyne; and by Prof. Forbes from Zetland; also from Cornwall, in forty fathoms.

Galathea intermedia, Kroyer.

This species somewhat resembles the young form of *Galathea squamifera*, except that its colour is a pale yellowish red. The carapace, too, is more level on the lateral margin and also more spinous. The first pair of legs are proportionately large and nearly equal in width their whole length.

There appears to be some difficulty in determining the genus *Galathea*, for in the 'Transactions' of the Tyneside Naturalists' Club, 1863-4, p. 184, this species is stated to be *G. intermedia*, and again *G. intermedia* has been called, and is, we believe, considered to be identical with, *G. andrewsii*.

As however we have not had an opportunity of seeing this species, we are unable to offer a decided opinion upon it.

We should not consider it by any means rare, for it is recorded (under various names) from Shetland, St. Andrews, Dublin, Belfast, Berwick, Plymouth, and Cornwall.

Galathea dispersa, Bate.

This species, which is mentioned in the British Association Report, 1868, p. 265, as common in the seas surrounding the Shetlands, appears to occur also in the Channel.

It much resembles the foregoing species; the hands are narrow and ovate, the fingers meeting along their inner margins.

Amongst a large number obtained by us from the Channel, we noticed several beautifully-marked varieties having a white medial band, with a lateral one across the thorax, in some instances forming a cross.

Munida bamfficus, Penn.

This remarkable species differs considerably from *Galathea*, and in some points is more closely allied to the true lobster form.

Its carapace is transversely ribbed with short hairy ridges,

terminating at the lateral margins in small spines; the rostrum is composed of a long straight spine, flanked by two smaller ones, which form the protection to the eye. The anterior pair of legs are very long, somewhat narrow, and nearly of the same width throughout; the first joint is armed with spines at the end, and the whole of the joints are hairy and slightly spinous. The remaining legs are long and slender, the terminal claw not being so sharp as in the foregoing species. The abdominal segments are convex, more so than in the case of *Galathea*, and the colour is a dull reddish tint, more or less marked with a brighter red. This species is about two and a half to three inches in length, but, as its anterior legs are about twice this length, it gives the animal a larger appearance.

Munida bamfficus appears to be a very decided deep-water species, and hence is looked upon as rare. It has been obtained from Plymouth Sound, Falmouth, Zetland, Banffshire, and Ireland, from stomachs of cod, as also from the Mull of Galloway, where it was "dredged alive in water from one hundred and ten to one hundred and forty fathoms in depth."

Scyllarus arctus.

This rare species is a recent addition to the British Crustacea, not being mentioned in Bell's work. It will be found figured in 'The Zoologist,' 1879, p. 473. It is a stout, thick-set animal, possessing no enlarged and heavy forceps, as in the case of its allies, but simply short and comparatively slender pincers; the remainder of the legs are short, stout, and armed with sharply-pointed terminal joints.

The antennal scale is much enlarged, and is a prominent feature in this species; the antennæ are short, and the eyes stout and club-shaped.

The thoracic and abdominal segments are strongly arched, about the same width throughout, except towards the last two segments, where they are narrower; the thorax is spinous, the points being chiefly confined to a central and two lateral ridges, and directed forwards.

The colour of *Scyllarus arctus* is a rich reddish brown, and the length is about six inches. It is a rare species in our seas, but has been taken off the Devon and Cornish coasts, and we have

obtained several from the Channel Islands. The ova are of a very brilliant red, and are mature about May. It is popularly known as the "Broad-nosed Lobster."

Palinurus vulgaris, Latr.

This boldly characterised crustacean is also an important one, constituting as it does an article of food of considerable value, and therefore being the subject of a branch of fishing industry of no mean proportions.

Its chief feature is the dense mass of variously-sized spines with which its carapace is covered; these spines point forwards, and the eyes and other delicate parts are protected by them in a very marked manner. The rostrum is strongly spinous, and the basal joints of the antennæ are similarly clothed. The antennæ themselves are extremely long; they are segmented, and the border of each segment is fringed with setæ. The eyes are kidney-shaped and large. The anterior pair of legs are larger in the male than in the female, but they do not attain to the comparative bulk usually reached by the Crustacea generally; the forceps are imperfect, the inner one being simply represented by a spine; the remaining legs are strong, smooth, and armed with a hooked terminal joint, on which are a few tufts of setæ. The abdominal somites are smooth, arched, and terminating at the lateral edges in a triangular form.

The swimmerets are absent on the first abdominal somite; on the rest they are very remarkable, being fleshy and more like membranaceous plates than the plumose pseudo-feet of most other Crustacea. The ova are of great interest, presenting as they do a curious anomaly, which is their small size as compared with the size of the animal; in fact, the eggs of this species are actually smaller than the eggs of *Axius stirynchus*, although the latter animal is barely larger than one of the first legs of *Palinurus vulgaris*. This remarkable discrepancy in proportionate sizes of ova does not appear easy of explanation. There are few species whose ova serve to illustrate the interesting features of crustacean embryology better than this, when examined microscopically; the ligatures by which each ovum is connected to the main egg-stalk, and the developed zœa folded with its large tail curved round till it covers the cephalo-thorax, are all beautifully shown as the eggs approach maturity.

The colour of *Palinurus vulgaris* is reddish brown, with purple shades and white markings, although varieties frequently occur, a fine one in Mr. Carrington's collection being, when alive, of a brilliant tint almost approaching blood-red, and this colour has altered but very slightly in preserving the animal.

This species often reaches a length of fifteen or eighteen inches exclusive of the antennæ; it is abundant on our southern and western shores, but is not common in the north.

Palinurus vulgaris is a favourite specimen for marine aquaria; hence it is somewhat better known than many of our other Crustacea, and many very interesting points in its habits have been observed, not the least being the shedding or casting of its exo-skeleton during growth: this is done so thoroughly and completely that the skin of even the eyes and mouth-organs are shed with the rest, and it is possible to obtain a cast skin as perfect in external detail as the animal itself.

THALASSINIDÆ, Bell.

The members of this curious family are chiefly characterised by their remarkable habit of boring. Their burrows, which are made in mud, clay, or detritus, are often of great length, and the process of digging for them is a most difficult and tedious one, on account of the tortuous and meandering windings of these passages. The genera of this family are of the lobster form, but slender in structure, the primary legs being heavy and massive, and adapted for burrowing purposes.

Callianassa subterranea, Leach.

This remarkable crustacean has the thoracic carapace arched and quite smooth, the abdominal segments being also smooth, but flattened and somewhat soft. The eyes are very small, and the antennæ are about one-third the length of the animal. The first pair of legs are very unequal in size, but not constant, sometimes the left, sometimes the right, being the larger. This big claw is smooth, massive, and armed with powerful forceps, which are fringed with cilia on the inner edge; the arm being furnished with a large spine curved forwards. The small claw is very simple in structure, and terminates in a small forceps. The second pair of legs have the terminal joint enlarged and furnished

with a pincer. The swimming-feet are plumose, and the tail consists of a telson and four plates fringed with cilia. The colour of this species is of a beautiful pink, and its length is from two to three inches exclusive of claw.

Callianassa subterranea, as its specific name implies, lives in burrows or subterranean passages; we have obtained it from such positions in the felspathic clay on the shores of Jersey in considerable numbers. Its ova are large and few in number, and it would appear as if this was a rule with those Crustacea whose habits are fossorial, and who are not thereby subject to the exterminating influences that others are; the eggs are hatched in September and October. Besides Jersey, this species is recorded from the Devon coast, from the coast of Down, Ireland, as well as from Cornwall (probably Polperro), and the Moray Firth.

Gebia stellata, Leach.

This species we have not yet seen; it is, however, described by Prof. Bell, who says that the gastric region of the carapace is hairy and sharply scabrous, the rostrum small and acute, and the external antennæ with the setæ about the length of the body. The anterior pair of legs have the arm elongated and slightly curved, with a small tooth near the extremity; wrist armed with a sharp spine; the second to fifth pair of legs gradually becoming more slender. The abdominal somites are broader in the middle than at the extremities, the swimmerets are plumose, and the tail-plates short and broad, being, like all the legs, fringed with cilia. Length about an inch and a half.

This species is said to have been discovered by Mr. Gibbs in the Kingsbridge Estuary, and Leach states that "it has been taken on some of the shores of Plymouth Sound, under the mud, in which it makes long winding horizontal passages, often of a hundred feet or more in length." It has also been recorded from the Moray Firth.

(To be continued.)

NOTES AND QUERIES.

The Birds of Walney Island.—Under this title Mr. W. A. Durnford has published a pamphlet of twenty pages (to be had of R. Griffiths, Church Street, Barnsley), in which a list of 188 species is given. This number strikes us at once as being remarkable; but on reading the Introduction we perceive that the writer has “attempted to embrace every species which, to the best of his belief, has occurred within thirty or forty miles of the borough of Barrow-in-Furness (of which Walney forms a part), so that within these limits he includes a large portion of the Lake district, embracing parts of West Cumberland and Westmoreland, as well as North Lancashire.” Under these circumstances it would have been better to have selected a more comprehensive title. Amongst the more remarkable species we find the Spotted Eagle, a specimen of which, picked up dead on the west shore of Walney in 1875, was examined by Mr. Durnford, who states that “not having been able to ascertain any other circumstances in connection with its occurrence, he does not feel justified in adding it to the list of British-killed specimens.” Yet, somewhat inconsistently, he introduces it all the same into his list. Such rarities, also, as the Goshawk, Swallow-tailed Kite, Crested Tit, and some others, are included, on what appears to be rather slender evidence. Mr. Durnford, however, states in his Introduction that his list is subject to correction, which he will be glad to receive, and which may be addressed to him at Tankersley Rectory, near Barnsley.

Animal Parasites.—Under the name of “tick” two quite distinct animal forms are often confounded. The sheep-tick or louse, as shepherds call it, found at the roots of the wool on sheep, and which I have often formerly had brought to me under one of those names, is an aberrant form of *Hippobosca*, a genus of dipterous insects, the typical species being the well-known forest-fly. An excellent figure of the sheep-tick will be found in Curtis’s ‘British Entomology,’ pl. 142, under the name of *Melophagus ovinus*. *Ixodes* is a genus of the *Acaridæ*, a group easily distinguished from the true insects by their having eight legs in the adult state. Six British species of *Ixodes* are described by Dr. Leach in vol. xi. of the Linnean ‘Transactions.’ There are probably others not as yet determined. The one best known is the common dog-tick, found in a free state in woods and plantations, and attaching itself not merely to dogs, but to hares, &c., and especially to hedgehogs, which often abound with them, the ticks getting their hold as the animals pass through the close grass. After attachment they soon get gorged with blood, their abdomens swelling to an immense size compared with the insignificant appearance of them previous to attachment. But I can remember no instance of an *Ixodes* found on a

sheep, though I would not undertake to say they never occur on that animal.—L. BLOMEFIELD (Bath).—From *Nature*.

[Our readers may not all be aware that under the signature "L. Blomefield" they have a communication from a very well-known zoologist. The Rev. Leonard Jenyns, with whose excellent 'Manual of British Vertebrates,' published in 1835, we are all familiar, some years since changed his name to Blomefield, and went to reside at Bath, where we are happy to hear he is still living in good health, and taking almost as keen an interest as ever in Natural History.—ED.]

MAMMALIA.

A Pied Shrew.—On March 21st I caught a pied example of the common Shrew (*Sorex araneus*, Linn.). It is a small specimen, having part of the head and body of the normal colour, but that of the latter interrupted by a white band, which encircles nearly the whole of the body at the loins, being widest below, and extending over about half the surface of the abdomen, where it takes an irregular form, the edges, however, being everywhere sharply defined. There is in addition to this a patch on one side of the head and neck, of silvery or hoary grey, shaded off gradually into the hue of the surrounding parts, and apparently occasioned by the occurrence of white or whitish hairs among those of the legitimate colour.—G. T. ROPE (Blaxhall, Wickham Market).

BIRDS.

Notes on Ornithology from Devonshire.—An immature specimen of the Pomatorhine Skua was shot on the Exe in November last. At the same time a flock of Brent Geese visited the estuary of the Exe, and some were killed. Hardly anything of interest occurred in this neighbourhood during the winter, birds of all kinds being remarkably scarce. Very few Redwings have been seen, and I have not noticed a single Fieldfare, though a friend saw two or three. A fine adult Great Black-backed Gull was shot on the Exe at the beginning of February. Sparrows were building on the 10th of that month, and several Rooks' nests were partially built in the close of Exeter Cathedral, and by the 22nd a good many more nests were built there, but elsewhere Rooks had not commenced to build before the 24th. On the 28th a Bittern was shot at the mouth of the River Clyst, four miles from Exeter. On the 10th March a Black-headed Gull in full summer plumage was killed at Cullumpton. A few individuals of this species may be seen throughout the autumn, winter, and spring on the river at Exeter Quay. The adults have remained here till within the last few days (8th April), and there are still some immature birds of last year to be seen. They appear to remain much later here than at

Plymouth. On the 18th March, returning from a long country walk without having seen anything worth noticing, as I passed over the bridge near the Custom House on Exeter Quay, a bird suddenly appeared before me, which I at once perceived was something I had never seen before. It was rather tame, but very restless, and evidently a stranger, creeping along at the base of the walls of the goods sheds, where it attracted the attention of some Sparrows, who mobbed it. It was a Pipit, having a grey head and back; white throat, breast, and belly, slightly tinged with buff on the sides of the neck, and the outer tail-feathers were pure white. It opened and shut its tail, displaying the white feathers. I think there is little doubt but that it was a Water Pipit (*Anthus spipoletta*) in full breeding plumage. It was very like the figures in Professor Newton's edition of Yarrell's 'British Birds.' I went to look for it several times subsequently, but could not see it again. Specimens of Pipits killed at Beer in February last have been sent me as Water Pipits, but they appear to be the variety of the Rock Pipit called *Anthus rupestris*, Nilsson. On the 23rd (Good Friday) I saw a male Continental White Wagtail near Exeter. I am pretty sure this species breeds annually in a pigeon-hole in a stable wall about three miles from Exeter. On the 25th (Easter Day) I observed one Chiffchaff, evidently just arrived, being very tame, allowing me to approach it within a foot or two. I saw no others then nor any since. On the 28th a very remarkable variety of the Nuthatch was shot within the city limits of Exeter. There is no white on the lower parts, which are dark-lead colour. The head is much darker than usual, and the black line through the eye is broader. The rufous patch over the thigh is rather larger and deeper in colour. There is only a very slightly light-coloured patch on the side of the neck. About this time a Guillemot, still in winter plumage, was picked up dead on the coast, evidently starved to death; and another Greater Black-backed Gull was obtained on the river. On the 29th a male Ring Ouzel was shot at Alphington, close to Exeter, being the first I have ever heard of occurring in the spring in this neighbourhood, though it has been seen at Exmouth, and in other places around Exeter, in autumn, and is numerous on the Tors of Dartmoor. A Rough-legged Buzzard was killed near Lustleigh, Dartmoor, on the 28th March. Hedgesparrows and Starlings were building on the 2nd April.—W. S. M. D'URBAN (Albert Memorial Museum, Exeter).

Heronries in Somersetshire.—When out hunting with the Taunton Vale Hounds last year, 1882, as we were running through the coverts at Halsewell on the 3rd of April, several Herons rose from some fir trees in the woods. I counted ten then, and there were several others on the trees, which kept up a constant croaking at the hounds as they were running past. I did not then know of the existence of a herony at Halsewell, so was surprised to see so many Herons on the trees, evidently building or

repairing old nests. The hounds were then running, and I had not much time to look at them, hoping to pay another visit to the spot soon afterwards, but I was unluckily prevented from doing so. There was no one out then who could give me any information about the heronry, which I supposed existed there. This year we were at the same place on the 6th of April drawing the woods for a fox, when I again saw the Herons, and I had more time to have a good look at them. There were five or six pairs flying round over the trees and wheeling about, and a good many more never rose from their nests, but made a loud croaking at the hounds whenever one passed under a tree on which there was a nest. A farmer who was out, and who rents the adjoining land, told me that so long as he could remember there had always been a few Herons there nesting every year, but that during the last two or three years their numbers had increased considerably, and he thought that now there were between thirty and forty pairs nesting there. All the nests that I could see were on the tops of thick fir trees. This heronry at Halsewell was not mentioned by Mr. Harting in his list of British Heronies in 'The Zoologist' for 1872, or in any of the additions subsequently made to that list; nor was it mentioned by myself in 'The Birds of Somerset.' I only knew of two at that time, which were included in Mr. Harting's list, namely, one at Picton in the west, and another at Brockley Woods in the east of the county,—to which Mr. Harting added a third, namely, that at Knowle House, near Dunster. I think it, therefore, worth while to mention this one at Halsewell, as it makes four well-established heronries in this county.—CECIL SMITH (Bishop's Lydeard).

[On the subject of this heronry Mr. W. Taylor, of Edgbaston, writing on the 20th March last, states, on the authority of Mr. E. Barham, who resides in Somersetshire, that "the heronry at Halsewell, which was set going about twelve years ago by an enterprising pair of Herons, numbers this year some fifty nests. Mr. Barham's late bailiff was there during the second week of March, and counted more than sixty birds sitting on the tops of the trees.—ED.]

Occurrence of the Pine Grosbeak in Cambridgeshire.—I am glad to be able to forward details of the capture of a Pine Grosbeak, which has, I believe, not been previously recorded. The bird was shot by one Robert Scotcher, groom to the Rev. A. H. D. Hutton, of Little Abington Vicarage, Cambs., in that gentleman's grounds, on the 13th of January, 1882, after having been seen, unaccompanied by any other bird, on several occasions in the covers around Abington Hall. Scotcher, not knowing what kind of a bird it was, sent it to an amateur in the village for preservation, but after having being wretchedly stuffed, and nearly spoiled by mice which were allowed to eat its legs and tail, it was sent to Travis, of Saffron Walden, who repaired the mischief. In the end Mr. Hutton

presented it to the Museum in this town, where it now is. Mr. Hutton, who has kindly supplied me with information, says that when shot it was feeding on the branches of a spruce fir, and that it proved to be a female, although from the plumage one would have supposed it a male. The following is a brief description :—Crown, cheeks, nape, whole of back and upper tail coverts had the feathers blackish grey, all being broadly edged with red, which showed a little mostly on the back, but not on the head or neck. The red was of a peculiar tint (certainly not “vermilion red,” as described by Yarrell, and as on some other specimens with which I have compared it), which may, perhaps, be best described as red strongly tinged with crimson-lake. Tail-feathers blackish brown, faintly edged with red. Wing-coverts as tail, each feather tipped with white strongly tinged with red, thus forming two bars. Quill-feathers as tail. Outer edge of primaries margined with red. Breast, throat, and sides much the same as back, but with one or two yellowish feathers intermixed low down. Belly and under tail-coverts greyish, edges lighter.—ROBERT MILLER CHRISTY (Saffron Walden).

Nesting of the Marsh and Reed Warblers.—As doubts have been expressed with regard to the breeding of the former of these birds in this country, it may interest some of your readers to know that in the middle of July, 1880, I found a nest containing four eggs, somewhat incubated. The nest was attached to stems of *Scrofularia aquatica* and the common nettle, and was situated a few feet from the bank of a brook near Bath, Somersetshire. As one or two notices of the nest of this bird, taken near Taunton, have been recorded in ‘The Zoologist’ (1882, pp. 265, 306), I infer that it breeds annually in Somerset. The eggs are not to be mistaken for those of the Reed Warbler. I have compared them with a series of more than forty of the latter, and find they more resemble in colouring those of the Great Reed Warbler. I believe it is not generally known that the Reed Warbler is exceedingly plentiful along the course of the Bristol Avon, especially near Bath. In the months of June and July, 1881, I found 24 nests, containing altogether 46 eggs, not including young ones. They were all built on osiers except two, one of which was in a currant bush, the other in a sallow tree. In one osier bed were eight nests. I have also found the bird to be common in the summer of 1882 in some marshes about eight miles from Cardiff, South Wales. There are numbers frequenting some large reed beds.—C. YOUNG (Llandaff).

Bitterns Migrating in a Flock.—On Dec. 15th last, when steaming from Alexandria to Cairo about sunset, a flock of forty or fifty large birds appeared slowly flapping towards us. When a long way off I at first mistook them for Lapwings, but as they passed close over us I saw they were Bitterns, the common *Botaurus stellaris*. I never before saw so many

together, but there was no doubt whatever about the species. They flew in a V formation, but every now and then got into great confusion, as if they had suddenly been fired at.—H. R. KELHAM (Captain 74th Regiment).

[This observation of the migration of Bitterns in a flock is extremely interesting, and we have not been able to find any similar record relating to this species. Sportsmen in England when out snipe-shooting have often come across a number of Bitterns scattered about over the marsh, and suggesting the probability of the arrival over night and gradual dispersal of a flock of these birds, but we believe that no actual observation of a flock *en route* as seen by Captain Kelham has hitherto been reported.—ED.]

Choughs in the South of Ireland.—Since October last I have seen two pairs of Choughs, *Pyrrhocorax graculus*, about the cliffs at the mouth of Glandore Harbour. On the 10th April I saw a pair, which were very noisy, wheeling about over my head. They must have had their nests somewhere near. I often see them going and coming to and from their feeding-grounds. They seem to go a considerable distance inland. I once saw a pair about four miles from the sea.—C. DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

A Blind House Martin on the Wing.—Late in the summer of 1879, while watching the flight of some of these birds at Mytton, in Shropshire, I observed one of them repeatedly fly very close to where I was sitting. It was much slower and more deliberate in its movements than its companions, and I succeeded without difficulty in catching it. On examination I found that it was blind, the balls of both eyes being absent. I placed it on the back of my chair, where it remained for some time. It then flew away and resumed its local flight. During the time it was at rest on its perch I observed that it turned, or rather twisted, its head as if in the act of listening. Its flight also was much lower than that of its companions, and it was curious to notice how it avoided coming in contact with the branches of the trees through which it constantly flew.—G. GYLES (Kilmurry House, near Waterford).

[We remember to have heard some years ago of a wild duck being shot which on examination proved to be completely blind—a case, it was believed, of congenital blindness. The sense of hearing, in both these cases, must have been intensified to such an extent that the birds were guided entirely by the notes of their companions. But how they contrived to avoid coming in contact with intervening obstacles is marvellous.—ED.]

Fire-crested Wren at Oxford.—As I believe that examples of this bird have hitherto been recorded as occurring in the summer and autumn only, I may mention that on February 16th, of this year, I observed one in the Botanical Gardens here. It was twisting about in a yew tree, and

I watched it carefully. The white line about the eye is a surer guide to identity than the crest.—A. B. R. BATTYE (Oxford).

[The first recorded British specimen of this bird was obtained near Cambridge in the month of August, 1832. With the exception of one other, procured in East Lothian, this is believed to be the only one procured here in summer; all others, according to Prof. Newton (4th ed. Yarrell, i. p. 457), having occurred between September and April, but mostly in the depth of winter.—ED.]

Rookeries in London.—In 'The Zoologist' for 1878 (pp. 193—199), Dr. Hamilton gave a report on this subject, supplemented by Prof. Newton (pp. 441—444), and additional notes were contributed subsequently (1879, p. 268; 1880, pp. 143, 515), in which the unwillingness of Rooks to leave the metropolis was clearly shown. It is interesting to observe that since the destruction of several large rookeries, notably those in Kensington Gardens and behind Hereford Square, small parties of the birds have established themselves in many new places. For instance, this spring four nests have been built in the three elm-trees on the south side of Kilburn Square, where no Rooks were, I believe, ever known to have built before. Other new sites have been, I understand, occupied at Barnes and even in Kensington; doubtless some of your readers can make the record of London rookeries complete to the present date.—H. T. WHARTON (39, St. George's Road, Kilburn, N.W.)

The Birds of Lambay Island.—A visit to Lambay on the 19th of March last yielded the following observations:—The Peregrine Falcon was busy about its breeding place, no eggs being yet laid, nor nest made apparently, but with that they sometimes dispense entirely. A Raven's nest contained three eggs, one rotten and two on the point of being hatched. The nest, large and cumbrously made outside, was neatly and comfortably lined with sheeps'-wool, horse-hair, and moss. With regard to the Hooded Crow, I should mention that it occurs sometimes at Howth, and is commoner than I supposed at Wicklow, where Mr. Barrington finds it breeding. It is, however, a decreasing species, and rarely seen near Dublin. The Rooks were laying, and settling their nests. I accidentally omitted mention of the rookery at the Castle. I was informed by the lads on the island that a pair of Magpies usually breed on Lambay. I was much interested to see that the Puffins had arrived. They had been there for a few days, and were no doubt cleaning out their burrows. This bird appears to be about the earliest summer migrant to arrive in Ireland; it was certainly the earliest this year in Co. Dublin. The only other birds on the cliffs were the Cormorants; they were, I believe, breeding in holes in the rocks, in quite inaccessible situations. The Cormorant remains on the island through the winter, roosting in these holes. No Gulls were seen, but a pair of Manx Shearwaters were observed between Rush and Lambay, about a mile and a half

from the island. Through an unfortunate oversight, the names of the Swallow and the House Martin were omitted from the above list. Both these birds breed on the island, the former about the castle, and the latter on the north-eastern and eastern cliffs. I have never seen Swifts on Lambay.—H. C. HART (14, Lower Pembroke Street, Dublin).

REPTILES.

The Palmated Newt in Gloucestershire.—Desiring to procure some examples for Mr. Rope and Mr. Aplin, I recently wrote to a correspondent, Mr. Witchell, of Stroud, by whom I had been favoured with examples in 1881. I asked Mr. Witchell to give some account of its habits in his district, and believe that the following remarks, extracted from his reply, may prove of general interest. He says:—"I first observed the Palmated Newt in the neighbourhood of Stroud in 1873, in some pools near the Stroud Reservoir. They are there common, and keep down the insects. I have noticed that where there are many Palmated Newts there are few Smooth or Common Newts. I have found the former (really the common Newts here) in all the pools on the Cotteswold Hills surrounding this town, and in some of them they are very plentiful. In one pool in a brickyard also I found immense numbers; and a small boy, whom I asked to procure me some, brought a bucket-full of them to our house the same evening. Whether the Palmated Newt destroys the tadpoles of the Common Newt, I cannot say, but I am certain that, in any pool near Stroud, you would find twenty Palmated Newts for one Smooth one. I may add that the Palmated Newt leaves its winter quarters earlier than the other two species, many being killed by the occasional early frosts, when the ponds are frozen over. They retire also for the winter later than the other Newts. The tadpoles of the Palmated Newt are often devoured by the tadpoles of the Great Water Newt, even when almost ready to leave the water." To the foregoing it may be worth while adding the following points:—1. A pair of Palmated Newts which Mr. Witchell gave me in 1881 showed a strong predilection for the tadpoles (or "Polheudes") of the Common Frog. 2. The fine filament at the end of the male's tail did not become absorbed during the following winter, as Dr. Cooke states is usually the case ('Our Reptiles,' p. 168). 3. My examples were very late in hybernating, and seemed to bear cold better than the Smooth Newt.—H. A. MACPHERSON.

BATRACHIANS.

The Edible Frog in Suffolk.—In connection with recent remarks on Batrachians (pp. 84, 129, 130) it may be of interest to note that in August of last year a specimen of *Rana esculenta* was found in the garden of the house at which I was then staying at Felixstowe, in Suffolk. I kept it for two days under a flower-pot, and then it escaped. I have now no books by me to which to refer, but I believe that some exist, or formerly existed, at

Thetford. I do not think, however, that they were asserted to be indigenous there. Understanding from Dr. Taylor, of the Ipswich Museum, that he had found the Natterjack at Bawdsey, I spent some hours there upon a careful search for examples, but without success; and I have reason to believe, from the reports of others, that the Bawdsey colony is now extinct.—A. B. R. BATTYE (Oxford).

[The colony of *Rana esculenta* near Thetford was discovered thirty years ago (1853) by Prof. Newton, whose account, originally published in 'The Zoologist,' will be found reprinted in Cooke's 'Our Reptiles,' p. 102.—ED.]

FISHES.

Occurrence of the Wolf-fish in Devonshire.—A fisherman brought me a specimen of the Wolf-fish (*Anarrhichas lupus*, L.) taken at Teignmouth in a herring-net on the 20th March last. Its total length was 3 ft. 5 $\frac{3}{4}$ in. Width at the commencement of the dorsal fin, 11 $\frac{1}{2}$ in.; width at centre of abdomen, 10 $\frac{1}{2}$ in.; width just behind the vent, 8 in. Colour almost uniform grey, the black bands only faintly visible. The anal aperture was remarkably large and conspicuous. The stomach contained the remains of eight large Whelks (*Buccinum undatum*), recently swallowed, the opercula being still attached to the muscular feet, but there were only a few fragments of the shells, showing that the fish must somehow get rid of most of the shells after crushing them, retaining the animals. Besides the formidable array of teeth in the jaws and palate, there were three rows or groups of teeth on the lower pharyngeal bone, a fact not mentioned by Gunther, Yarrell, Couch, or Day. I found three specimens of a remarkable *Lernean* on the gills, but unfortunately lost one; the other two I put into spirits. There was very little smell from the flesh, except the large cheek-muscles, which had a peculiar rank scent. A person who ate some of the flesh, after being cooked, pronounced it very good. Couch mentions one specimen taken off Plymouth, and that is, I believe, the only previously-recorded specimen which has occurred on the coast of Devon. The figure in Yarrell's 'British Fishes' appears to have been drawn from the imagination of the artist. Dr. Day's illustration of this species in his 'Fishes of Great Britain and Ireland' is not so good as the others in that admirable work, and does not look as if it had been taken from a recent specimen, the front teeth being too conspicuous, and placed too vertically instead of the lower ones projecting almost horizontally from the jaw, and their shape is different from those in my specimen. The dorsal fin comes a little too far towards the head, and there is a point on the gill-covers not to be seen in the present individual, but the shape of the head is represented more correctly than in Couch's figure in his 'Fishes of the British Islands,' which, however, shows the form of the body the best. There are no "regular furrows diverging from the eye," as mentioned by Couch, and shown in his figure. The specimen has been

preserved for this museum.—W. S. M. D'URBAN (Albert Memorial Museum, Exeter).

Occurrence of the Lump-sucker in Devonshire.—On the 3rd April a specimen of the Lump-sucker was captured at Exmouth, having followed a crab-pot which was being hauled up. It is the largest I have ever received from this coast, being 1 ft. 9 $\frac{3}{4}$ in. in length, and 10 in. in width at the pectoral fins. It was a female, like most of those taken near the shore in spring, and was of a deep bluish black colour, marked with greyish white. There were a great many specimens of a small *caligus* on the skin. There was nothing but mucus in the stomach. The roe was not developed. Some of the fin-rays were curiously enlarged, and on the upper angle of the caudal fin was a bony excrescence. It is stated that there are no teeth on the tongue, but in this specimen there is a group of strong teeth in the centre of the lower part of the mouth. This fish is not very common on this coast. Very small ones are sometimes obtained in the estuary of the Exe. It appears to be more numerous in deep water off Plymouth, but at Exmouth, Teigumouth, and Brixham it is looked upon as a great rarity by the fishermen.—W. S. M. D'URBAN (Albert Memorial Museum, Exeter).

The "White Trout" of Pennant.—The Rev. H. M. St. Aubyn, of Clowance, some time since informed me that he had, in his ponds there, Common Trout and another and different fish of the Trout family, which, as a rule, occupied different sides of the pond. He has kindly sent to me recently a specimen of the latter fish, and on examination I found it, beyond all question, to be the "White Trout" of Pennant—the fish which Jenyns doubted might be the young of *Salmo trutta* (the Sea Trout or Salmon Trout), in which doubt Yarrell acquiesces with, apparently, a reservation that he wanted proof of its occurrence in waters entirely disconnected with the sea before he declared it a separate species. It is also the *Salmo trutta*, var. *albus* of Day, who does not declare it to be exclusively a fresh-water fish. Clowance ponds are fed by a rivulet rising in granite hills, a few miles above them, and about half a mile below the ponds water charged with mineral refuse begins to flow into this rivulet, increasing in quantity from the various mines on the banks, until, some six or eight miles down, it falls into the sea in the Hayle Estuary. This pollution has been going on for at least a century, and in the polluted waters no fish, not even eels, can live. So that here we have a fish, identical in every way except in size with *Salmo trutta*, spending its whole existence, and breeding freely, in fresh water. I think this shows that *Salmo trutta*, var. *albus*, may be a purely fresh-water member of the Salmon family.—T. CORNISH (Penzance).

ARCHÆOLOGY.

Origin of the Name "Daker-hen."—In Lincolnshire there is a common provincial term in use expressive of unsteadiness or uncertainty in gait, whether in bipeds or quadrupeds. Country people say he "dackers"

in his walk, or "I see'd him a-coming, but he 'dackered' a good bit as he came along," that is, advanced in an uncertain and hesitating manner. Speaking of a horse in a steeplechase, "he 'dackered' at his fence, and down he came." May not the word "daker," as applied to the Corn Crake, be a corruption, or another form, of this provincialism having reference to its apparent uncertain advance, as expressed in the ventriloquous call-notes, now here, now there, sometimes close to the listener, and then again at a distance? So that in time country folks, always quick and ready enough to note any peculiarity in the animal-life around them, would know it as the "dacker" or "daker-hen," the bird which "dackers" in its walk or advance.—JOHN CORDEAUX (Great Cotes, Ulceby).

[The verb "to dacker," with the signification "to waver, stagger, or totter," is given in Ray's 'Collection of North-Country Words,' where it is especially referred to as in use in Lincolnshire. Jamieson also, in his 'Scottish Dictionary,' gives the verb "to daker" or "daiker" as in use in Scotland. We scarcely think, however, that this offers the right explanation of the name "Daker-hen." A more probable origin, as recently suggested to us, is the Scandinavian *Ager höne*, i. e., "field-hen," it being in accordance with rule that the "g" of the one language should become the "k" of the other. The initial "D," difficult otherwise to be accounted for, is doubtless a corruption of "T," an abbreviation of "the." In the North of England we often hear the expression "t'ould man" for "the old man"; and thus we have "t'acre hen" for "the acre hen."—ED.]

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

March 18, 1883.—FRANK CRISP, LL.B., Treasurer and Vice-President, in the chair.

Professor T. S. Cobbold read a paper on *Simondsia paradoxa* and its probable affinity with *Spharularia bombi*. Thirty years ago Professor Simonds discovered a remarkable parasite within cysts in the stomach of a Wild Boar which died in the Zoological Gardens, London. This he regarded as a species of *Strongylus*, but Dr. Cobbold, in 1864, suggested its affinity with the genus *Spiroptera*, and named it *Simondsia*. The original drawings were unfortunately for a time mislaid, and have only lately been found along with the specimens, enabling Dr. Cobbold to investigate them more closely. He has now arrived at the conclusion that *Simondsia* is a genus of endoparasitic nematodes, in which the female is encysted, and furnished with an external and much-enlarged uterus, whose walls expand into branches terminating in cæca. The male is half an inch, and the female six-tenths of an inch in length. It now appears that what was at first mistaken for the head is in fact the tail, so that the supposed

strongyloid character disappears. Taking into account what is known of *Sphærulearia bombi*, as interpreted by Schneider, whose views are universally accepted, it appears that *Simondsia*, though unique, yet approaches *Sphærulearia* in the character of the female reproductive organs. Until Sir J. Lubbock's memoir on *Sphærulearia* appeared, the so-called male had never been indicated; but judged by Schneider's interpretation of that genus the male is still unknown. Dr. Cobbold points out that the so-called rosette in *Simondsia* is morphologically a prolapsed uterus furnished with two egg-containing branches—he regards the external branched processes as homologous with the sphærules of *Sphærulearia*, whilst the ultimate cæcal capsules have nothing comparable to them in nature. Dr. Cobbold describes all the peculiarities of this strange worm in detail, and gives a diagnosis of the genus and species.

A paper was read "On the Moths of the family Urapterygidæ in the collection of the British Museum," by Arthur G. Butler. The family of Geometrites, founded by Guénée under this name, can only arbitrarily be separated from the Eunomidæ. Dr. Packard says—"The fact that genera so closely allied as *Drepanodes* and *Entrapela* are placed separately in the families Eunomidæ and Urapterygidæ by M. Guénée seems to me a proof that the groups are artificial ones, and should be united." In the generic division of the Geometrites, although neuration (as throughout the Lepidoptera) must be considered of the highest importance, it is nevertheless impossible to ignore the characters offered by the different forms of the wings, each accurately repeated in series of allied species. Guénée, although evidently regarding structure as correlated with pattern and coloration, nevertheless gave one plate, chiefly of neuration as illustrative of the tribe. The absurdity of the number system, however, and one that from Mr. Butler's inability to believe it a fact, rendered the generic descriptions of continental writers unintelligible to him for many years, lies in the truth that it is essentially a retrograde movement. The author refers to Von Heinemann's '*Schmetterlinge Deutschland's*' (p. 6), where it will be seen that the veins are positively numbered from the back forwards, from the inner to the front margin. What Butler calls the front legs are their hind legs, and the club of the antenna, where it exists, must be the last thing to describe. In speaking of a branched vein like the median it is in accordance with common sense to call the first branch emitted the first and not the third; therefore in this vein the branches in this vein have to be counted upwards, but this is no excuse for counting the last emitted branch of the subcostal vein as first. Therefore Mr. Butler says that the number system, although easy to learn, is unreasonable, and (excepting in the case of very careful observers) worse than useless." The following new genera are indicated:—*Tristrophis*, *Gonorthus*, *Sermopteris*, *Nepheloleuca*, *Thinopteryx*, *Xeropteryx*, and *Æschropteryx*.

The 18th contribution to the Mollusca of the 'Challenger' Expedition, by the Rev. R. Boog Watson, was read, in which the author treats of the family *Tornatellidæ*, therein describing six new species of the genus *Actæon*.

April 5.—Sir JOHN KIRK, K.C.M.G., Vice-President, in the chair.

Messrs. R. M. Barrington, G. E. Comerford-Casey, F. V. Dickins, and E. Cambridge Phillips were elected Fellows of the Society.

There was exhibited for Mr. R. Morton Middleton a well-marked example of wood showing the extensive ravages of the Isopod *Limnoria lignorum*. The wood was from the pier-piles of West Hartlepool, where the said crustacean's depredations are very destructive.

Mr. F. W. Phillips read a communication in which he described a new species of fresh-water Infusorian allied to the genus *Gerda*, and which provisionally is named *G. caudata*.

Other papers read related solely to botanical subjects.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

March 20, 1883.—Prof. W. H. FLOWER, I.L.D., F.R.S., President, in the chair.

Mr. Sclater called attention to the fact that a living specimen of *Macropus erubescens* (a species originally described from a single specimen living in the Society's Gardens) was in the Gardens of the Zoological and Acclimatisation Society of Melbourne.

Mr. Sclater laid before the meeting a set of the sheets of a new List of British Birds, which had been prepared by a Committee of the British Ornithologists' Union, and would shortly be published, and explained the principles upon which it had been constructed.

Prof. Huxley read a paper on the oviduct of the Common Smelt, *Osmerus eperlanus*, and took occasion to remark on the relations of the Teleostean with the Ganoid Fishes. Prof. Huxley came to the conclusion that the proposal to separate the Elasmobranchs, Ganoids, and Dipnoans into a group, apart from and equivalent to the Teleosteans, was inconsistent with the plainest anatomical relations of these fishes.

Mr. G. A. Boulenger read a paper containing the description of a new species of Batrachian of the genus *Bufo* obtained at Yokohama, Japan, during the Expedition of H.M.S. 'Challenger.' The author proposed to describe it as *Bufo formosus*.

A communication was read by Mr. W. N. Parker containing some notes on the respiratory organs of *Rhea macrorhyncha*, and comparing these organs with those of the Apteryx and Duck.

April 3, 1883.—ST. G. MIVART, F.R.S., Vice-President, in the chair.

The Secretary read some extracts from a letter he had received from Mr. J. Sarbo in reference to the Gayal. The writer observed that *Bos*

gaurus (the Gaur), and not *Bos frontalis* (the Gayal), is the Wild Ox of Assam, and that *B. frontalis* is not known in a wild state, but only as a semi-domesticated animal owned by various wild tribes from Assam to Arracan.

Mr. Selater called the attention of the meeting to the skin of a Brown Crow from Australia, which had been sent to him for examination by Mr. Albert A. C. Le Souef, and which he was inclined to regard as a variety in plumage of *Corvus australis*.

Mr. A. G. Butler read a paper containing an account of a collection of Indian Lepidoptera made by Lieut.-Colonel Charles Swinhoe, chiefly at Kurrachee, Solun and Mhow. Thirty-two new species were described, and numerous field-notes by Col. Swinhoe were incorporated in the paper.

Col. J. A. Grant read some notes on the Zebra met with by the Speke and Grant Expedition in the interior of Central Africa in 1860-63, which certainly belonged either to the true Zebra, *Equus zebra*, or to its closely-allied northern form, the recently-described *Equus Grevyi*.

April 17, 1883.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, and called special attention to the three Sirens, *Siren lacertina*, from South Carolina, presented by Dr. G. E. Manigault; and to an American Teetee Monkey of the genus *Callithrix*, which it was difficult to determine satisfactorily in its living state, but which was certainly new to the Society's Collection.

Prof. Flower gave an exposition of the systematic classification of the Mammalia, which he had recently prepared for use in arranging the specimens in the Museum of the College of Surgeons, and in a treatise on the subject of Mammals in the 'Encyclopædia Britannica.'

A communication was read from Mr. W. L. Distant, containing the first of a series of contributions to an intended monograph of the Homopterous family *Cicadidæ*. In the present paper the author gave the results of an examination of the *Cicadidæ* contained in the Dresden Museum (including the specimens collected in Celebes by Dr. A. B. Meyer), and added the descriptions of other species belonging to the collections of Dr. Signoret and the author. Eleven species were described as new from various localities.

Mr. Selater read a second paper on the birds collected in the Timor Laut or Tenimber group of islands by Mr. H. O. Forbes, based on additional specimens lately received. The avifauna of the group, as indicated by Mr. Forbes's collection, contained fifty-nine species, of which twenty-two were peculiar to these islands.

A communication was read from Mr. F. Moore, containing the first part of a monograph of the Butterflies belonging to the groups *Limnaina* and *Euplœina*.—P. L. SCLATER, *Secretary*.

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THIRD SERIES

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NATURAL HISTORY AT THE INTERNATIONAL FISHERIES EXHIBITION.*

BY FRANCIS DAY, F.L.S.

WHEN investigating fisheries, their present uses and the benefits which might be derived from them, the inquirer soon becomes conscious of the necessity of studying many branches of "natural history," both in the vegetable and animal kingdoms, without a competent knowledge of which his labours will often be thrown away, or the results of his researches useless, if not positively misleading.

Fisheries are variously regarded by different classes; thus the fisherman chiefly concerns himself as to what he can obtain from them at the present time, regardless of suitable provisions for the next year's supply. The public mainly interest themselves in the cost of the fish as disposed of for food; while the scientific economist bases his conclusions respecting the value of fisheries in accordance with their produce, and should the supply be unequal to the demand he mostly advocates increased killing powers by the employment of more destructive agencies, erroneously believing that the stock in the sea is inexhaustible.

The naturalist and fish culturist ought to approach the question from an entirely different point of view; he should ascertain the life-history of all forms of fishes, not merely such as serve for human food, but also of those which form the

* From 'The Official Catalogue,' issued 12th May, 1883.

sustenance of the more predaceous kinds. He should endeavour to collect reliable information respecting the plants and animals which afford them sustenance and shelter, as well as ascertain what are their enemies or their friends, and what conditions favour the presence or absence of either class. Irrespective of the foregoing, he should consider the relationship of temperature, currents, soils, and the various conditions of the water in which they reside, to their migrations, growth, health, and reproduction. He should also ascertain whether fish are increasing in numbers, decreasing, or if the supply remains unchanged; if the size of those captured is augmenting or lessening; if their condition is better or worse than it was. Should investigations lead him to conclude that fisheries are being unduly depleted, he should carefully note in what families of fish such is occurring, if possible the cause; while in marine forms it is likewise necessary to inquire if fishermen have to go further out to sea to obtain their captures, if the killing powers of their implements have increased, and whether more men are now required to obtain the same amount of fish than was the case a few years previously. Lastly, it may be observed that, unless the investigator is able to distinguish the various species, he may easily imagine that he sees in some small forms, as the Solenette (*Solea minuta*), the young of the more valuable kinds as the Common Sole (*S. vulgaris*), whereas he is merely examining one sort that is worthless, except as food for the larger kinds.

Our fresh-water fishes are divisible into the river or "fluvatile" and the "lacustrine" or lake forms, while our marine ones may be considered as shore or "littoral" and "pelagic" or sea-species; these last being again subdivided into such as are generally found near the surface, at greater or mid-depths, and abyssal residents, or such as live in the deep sea, below the limits to which the sun's rays penetrate.

Fresh-water fishes may be permanent residents therein, as Carps; "anadromous," or merely visitants from the ocean for the purpose of depositing their spawn, and generally, but not invariably, leaving their young to be reared there, as the Salmon; "catadromous," or such as reside in fresh waters, visiting the littoral zone or sea in order to breed, as Eels, the young of which ascend into and are reared in our rivers.

To meet the destructive agencies to which the eggs and young

are subjected, fish are provided with a large amount of ova, which is mostly sufficient to counterbalance natural waste. Thus eleven millions of eggs have been taken from a 21 lb. Codfish; 550,000 from a Mackerel; 239,775 from a 4 lb. Brill; while a Salmon deposits about 800 for every pound's weight of the parent fish. Although most forms are polygamous, some are monogamous. The period of the year at which spawning occurs, the size of the eggs, the depth of water in which they are deposited, the time they take incubating, and the places selected for the ova, are exceedingly varied.

The eggs of Cod float in the sea until the young emerge, those of the Herring sink to the bottom, where, by means of a glutinous substance, they are attached to sea-weeds, rocks, and other objects; those of some species of flat fishes float so long as the water is agitated, subsiding when it is smooth. One form of Sea-sucker (*Lepidogaster*) affixes its eggs to the inside of a dead shell as a butterfly does to a leaf. The Garfish (*Belone*) has filaments springing from the outer covering of its ova, which enables them to adhere together in a mass, or attach themselves to contiguous substances. Anadromous forms deposit their eggs in running waters, but in different ways; thus the Smelt affixes its ova to planks, stones, &c., near high-water mark; the Salmon and Trout cover theirs with gravel; while the Grayling deposits it on the bed of the river. Perch and most Carps attach their eggs to water-weeds, Sticklebacks construct a nest, while in the tufted gilled fishes, represented by the Pipe- and Horse-fishes, the male undertakes the functions of a nurse, the eggs for this purpose, up to the period of the evolution of the young, being retained between the ventral fins, as in certain Pipe-fishes (*Solenostomus*), in tail-pouches, as in Horse-fishes (*Hippocampus*), or in receptacles on the breast or abdomen, as in the Pipe-fish (*Doryrhamphus*), or merely in two rows in the same position, as in *Nerophis*. The males of some tropical Sheat fishes or Siluroids also perform maternal duties by carrying the eggs about in their mouths until the young are hatched. In some forms, as Lampreys, the expulsion of the roe is mechanically assisted by the two parents fixing their sucker-like mouths to a convenient rock and entwining themselves round one another. Also in Carps, as in the common Goldfish, the male has been observed to roll the female over and over at the bottom of an aquarium until her eggs have become expelled.

Hybrid fishes are likewise deserving of great attention, as in fish-culture crosses between the Trout and the Charr have proved most successful, while the stocking of fresh waters by artificial means, and latterly the sea, are among the most satisfactory accomplishments of modern fish-culturists and naturalists.

Young fishes for varying periods after birth are sustained by the nutriment contained in the yolk of the egg or dependent umbilical sac, and during this period they have numerous enemies watching to make them their prey. Unable to stem strong currents, they are generally to be found concealed near the sides of streams or ponds, or else under the shade of stones, leaves of water plants and grasses; while the marine species are among the Algæ in the sea, or disporting themselves in the sunshine, and these places may be considered their nurseries, which should not only be left undisturbed, but protected from predaceous foes. As the yolk sac becomes absorbed, the fry of fish have to seek for their food, whether of a minute vegetable or animal character, and it is then that the eggs and young of other lower classes of animals (the Invertebrata) become invaluable for their subsistence.

In some places around our coasts or in fresh or brackish waters are various kinds of sea-weeds or Algæ which in the sea decrease in abundance with increasing depth, or, should they drift into deep water, they fall to pieces, sink, and form the basis of soft black mud, in which many forms of invertebrates find their food, while in their turn they afford sustenance for fishes. Besides sea-weeds being useful along our coasts as providing food for fishes, places for depositing their spawn, nurseries for sheltering and rearing the fry, there are likewise forms, some of which are microscopic, floating in vast quantities over the surface of the deep sea, as the so-called Sargassum, or gulf-weed.

Sponges, in both their fresh-water and marine kinds, and which equally belong to the group Protozoa, were long considered by some authors to be vegetable, by others to be animal organisms. The horny skeletons of some species are exceedingly useful for domestic purposes, while those of commerce are to a great extent brought from the Grecian Archipelago, the Red Sea, and the Bahamas, where they are obtained by divers.

Many of the Cœlenterata, as the compound colonies of the fixed and plant-like Sea Firs (*Sertulariidae*) and their allies, are

found in our seas, some in large quantities, and they are consumed by fish and other marine animals. There are also in this group the Jelly-fishes, Medusæ, which, during the summer and autumn months, are found floating in the ocean around our coasts, and occasionally, under their umbrella-like discs, young fish have been observed to obtain refuge from the pursuit of their enemies.

Corals among the Actinozoa in many ways hold a most important place, while their hard structures are exceedingly diversified and interesting. Commercial forms are principally obtained from the Mediterranean, the Red Sea, Persian and Arabian Gulfs, the Mauritius, the Islands of the Malay Archipelago, Japan, &c.; while the reef-constructing species are distributed, and can only exist where the mean temperature of the sea is not below 66°. The coral reefs are classed as forming Fringing Reefs, Barrier Reefs, and Atolls. These reefs are largely frequented by fish, some of which possess most gorgeous colours, but in many instances it has been observed that the flesh of those obtained from such localities is frequently poisonous.

Among the jointed Annuloida the term Entozoa has been frequently used for the purpose of designating internal parasites. Epizoa, on the other hand, is the term employed for certain small crustaceans, which, in their adult stage, are likewise parasitic upon the exterior of fish; they possess a suckorial mouth and limbs furnished with hooks, suckers, or bristles.

Mollusca, or soft-bodied animals, commonly known as shell-fish, constitute a most important class in the economy of fisheries, not merely in their providing adult fish with food, but also, as some of them breed at the same period of the year, their eggs and microscopic young are useful as aliment to the fish-fry. Some forms are likewise more directly employed by man as food and bait, as Oysters, Mussels, Cockles, and Periwinkles. The consumer needs no reminder as to how scarce the first have become; and along the east coast of Scotland Mussels for use as bait are attaining famine prices, while the belief appears to be almost general that there Mussel fisheries are retrograding. Many other forms of molluscs are much employed by line-fishermen for bait, especially Whelks, Squids, Cuttle-fishes, &c.

Among the marine Echinoderms, *viz.*, Sea-urchins, Star-fishes, and the Sea-cucumbers, *Holothuriidæ*, all assist more or less in providing food for fish, while a species of the last is largely

consumed as food in China, where it is looked upon as a luxury under the name of "trepang."

The true worms, or Annelides, are indispensable to fisheries. They are divisible into the Abranchiata, or gill-less forms, which contain Earthworms and Leeches; and the Branchiata, or gilled kinds, which include Tubeworms and Sandworms, &c. The Annelids comprise many forms largely employed as food for fish, and some, as the Lobworm, are very useful for bait; others, as Leeches, are detrimental to fish.

Insects have been said to be Nature's most favoured creation, having combined in them all that is beautiful and graceful, interesting and alluring, or curious and singular, in every other class of her (Nature's) productions. They are placed by entomologists in three great divisions, in accordance with whether they pass through a metamorphosis or not, and if they do, whether such is complete or incomplete. Many insects form food for fishes in some stage of their existence, while others are very destructive to fish-eggs.

Crustacea are most generally known as Lobsters, Crabs, Shrimps, Prawns, &c., and are variously divided by different zoologists. All Crustacea are water-breathers, some having eyes placed upon footstalks, while in others they are without stalks, being sessile or immovable. All undergo successive moultings or changes of shell, at which times lost parts become renewed. In the earlier stages of the lower crustaceans they emerge from the egg as a small body, having a central eye and two pairs of limbs (so-called zoea stage), while, as they gradually attain the adult stage, new segments and new limbs appear. In their earlier stages Crustacea become a most important article of food for fishes, while their adult forms are likewise esteemed by the more predaceous kinds.

The class Amphibia comprises Newts, Frogs, and Toads, and in some localities Frogs play a not unimportant part in fisheries, as they not only devour the ova, but likewise the fry, while their own spawn in turn becomes food for fish; and a Frog is highly esteemed by many fresh-water fishes. Reptilia (or Reptiles), including Tortoises, Turtles, Terrapins, Snakes, Lizards, Crocodiles, and Alligators, are more destructive to fish than are the true amphibians. The Chelonians are usually divided into the Swimming Turtles, the Mud Turtles or Soft Tortoises, and

the Terrapins, and lastly, the Land Tortoises. Some of the snakes and serpents are frequently found in fresh water, where they are inimical to fish; while in the seas of hot climates are the venomous Water-snakes (*Hydrophidæ*): these have a laterally flattened tail, lead an aquatic life, and live mostly on fish. Crocodiles and Alligators abound in the fresh and brackish waters of hot countries, and are large consumers of fish, but the form best adapted for this pursuit is perhaps the Gavial of India, which often attains to twenty feet in length, and is a resident throughout the Indus, Ganges, Brahmaputra, and Mahanuddi rivers. The Gavial possesses a long and slender snout, with a narrow mouth; they toss captured fish into the air, and as they descend catch them and swallow them head first.

Among birds, as is well known, not only are the swimming ones, as the Gannets, Cormorants, Gulls, and Terns, of our coast largely destructive to sea-fish, but the last two extend their range to inland waters, where, however, the Dabchicks, Coots, Moorhens, Herons, &c., assist in depopulating fisheries.

Among mammals the Whale and Seal fisheries are of great importance commercially. The Cetacea, or Whales, Dolphins, and Porpoises, themselves destroy immense quantities of fish. So also do the semi-aquatic or amphibious Seals; while the Otter in fresh and brackish waters is a large fish-consumer, although in the East it appears mostly to prefer Frogs.

THE RING OUZEL IN CAPTIVITY.

BY J. FOLLIOTT DARLING.

ON the 25th of May, 1882, while on a fishing excursion at Lough Talt, among the Ox Mountains (Co. Mayo), I took a nest of the Ring Ouzel, *Turdus torquatus*, having been attracted to the place by seeing the birds flying about near the top of a steep mountain overhanging the lake. After watching them for an hour (the male flying around me, screeching all the time), I succeeded in marking the hen bird to the nest, which was placed in the most precipitous part of the mountain, near the top, and was on a small ledge in a cliff.

The nest was composed of much the same materials as that

of a Blackbird, and contained four young ones nearly fledged ; the parent birds continuing to fly round and threatening me as long as I remained in the immediate vicinity of the nest, though they were not as bold as I have seen them on other occasions. I took two of the young home and reared them, feeding them about eight times a day, at first on bread and milk, slugs, and worms (taking care to kill the latter), with an occasional variety in the shape of insects and raw meat.

As soon as they were able to fly a little, I prepared a room for them, putting perches across, and giving them a bed of earth at one end which was regularly supplied with worms ; they soon commenced to pick for themselves, being quite unable to resist a small black beetle, or wood-louse, when moving. To the end their principal food was bread and milk (of which they were extremely fond) and worms ; I tried them often with meat (both cooked and uncooked), but they refused it, though they ate boiled potatoes, and luxuriated in currants red and black. Ripe gooseberries they would also eat, rejecting the skins, but picking out the interior.

The first time I gave them a bath I was greatly pleased with the behaviour of one of them ; he came up and looked at the water, and then hopped round the vessel two or three times, and finally jumped into the middle of it, and washed away as if he had been long used to it. Afterwards they both bathed regularly two or three times a day.

At first they were very bold and confident, and would fly up on my head and shoulders whenever I went into the room, but, having been absent from home for a few days, I found on my return that the greatest change had taken place. They had shed their nestling feathers, had attained to the long quills of "adolescence," and were very wild. Their true nature seemed to have established itself with the change of plumage, and whenever I entered the room they flew about in the extremest terror, dashing against the windows, screaming piteously, and finally, cowering in a corner and fixing their eyes on me, lay still. This continued for some weeks, during which time they would neither eat nor bathe in my presence, and, in fact, behaved as wild birds might be expected to do when first placed in confinement.

About the beginning of July I adopted a new system with them, and used to bring a chair into the room and sit there

reading and smoking for hours. In due time this produced the desired effect, and on the 6th of July I had the gratification of seeing one of them suddenly (as if by inspiration) hop up to me as I sat, and, after looking up into my face, seize the tag of my shoe-lace and pull it with all his might. He then investigated my tobacco-box, and seemed to take great pleasure in plucking out the pernicious weed and strewing it about the floor, and at last, to complete the reconciliation, he took a bath. The other bird was more shy, but from that day forward got gradually familiar once more. They never became bold enough, however, to fly up on my hand, although they would perch on my feet.

Having cut a few quills from the wing of each, I several times let them out into the garden to forage for themselves, but the difficulty of catching them again made them so much wilder that I gave up the practice, and, in fact, they continued in perfect health without it.

In appearance they differed slightly from each other; one, which I took to be the male, was a shade smaller than the other (I have noticed the same thing in other species of Thrush), the plumage was a little darker, and he had less brown on his throat, besides which he seemed inclined to be "cock of the roost." As regards colour they both resembled young Blackbirds, being of a brownish black all over, with the exception of the breast and throat, which was mottled with light brown, and some time before the autumnal moult they each showed a few white feathers scattered over the breast. On my return home, after a fortnight's absence, on the 1st of August, I found, to my chagrin, that one of them had died. This was the one I took to be the female, but it was unfortunately too much decomposed for dissection, so that I was unable to ascertain for certain whether my surmise as to the sex was correct or not.

On the 21st of August the remaining bird escaped through a broken pane of glass, greatly to my regret. Some time before he took his departure he had completed the autumnal moult, but had not got the white "ring" (or, more correctly, "crescent") on his breast, though the entire plumage was considerably darker, and the brown mottling had disappeared from the breast. He was seen about the place for a week or so, and then finally disappeared. I remarked three different descriptions of note:—(1) the commonest was a short, sharp "chuck-chuck-chuck," very

quickly uttered, usually a double note, but sometimes a single "chuck" or the double one repeated, not unlike the note of a Blackbird when flushed, but shorter and deeper in tone; (2) a shrill and loud scream when much alarmed; (3) a low, chirping, complacent note, only uttered when quiet and undisturbed.

When annoyed they had a curious way of snapping their beaks at the object of their displeasure. This was most frequently observed when one was on a perch and the other trying to get up on it was being repulsed. They showed considerable forethought at times; I often saw one kill several large worms by repeated pecking, and leave them on one side till required if not hungry at the time. They always dug with their beaks, throwing the earth with a sharp jerk to one side, and never used their feet for the purpose. They seemed fond of bright objects, and I have seen them peck at bright pieces of tin, as a Magpie or Jackdaw might do. I observed them frequently eating mouthfuls of coal ashes and straws, I presume to aid digestion.

On the 10th of August, for the first time, I heard the cock bird sing; he sat on a perch with one leg tucked up to his body and his wings drooping, and, swaying his head slowly from side to side, uttered a series of low guttural notes, interspersed with bars in a higher key, and occasionally giving a whistle something like that of a Blackbird. It was not unpleasing to the ear, and fully deserved the name of a song. The sounds seemed to be confined to the throat, and I could not see that the beak was opened during the performance. After that date he often sang.

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from p. 213.)

It is impossible to give any definite estimate as to the price of the serpents last mentioned, or of those about to be detailed as eligible for non-heated cages. Taking everything into consideration, perhaps ten shillings each, or an equivalent value, would be a fair average cost for the majority of them, when they are to be bought; though ten guineas might not purchase any given specimen at any given time.

A collection embracing living representatives of all the

European snakes would be very interesting, and might well satisfy the ambition of an ophiological amateur who aims at a speciality. They might all be kept here without artificial heat in the summer, and most of them would go through the winter safely in a state of hybernation. Those which will be most readily procured—exclusive of the common Grass and Smooth Snakes, which will be spoken of separately—are the Bordeaux Snake (*Coronella girondica*, Duméril and Bibron), found in the west of France, Italy, and elsewhere; the Æsculapian Snake (*Coluber æsculapii*, Sturm), of France and Central Europe; the Dark Green (*Zamenis atrovirens*, Wagler) and Horseshoe (*Zamenis hippocrepis*, Linn.) snakes of Spain and Portugal—the Horseshoe is said to be of frequent occurrence at Gibraltar; the Lacertine Snake (*Cælopeltis lacertina*, Dum. and Bibr.), Dalmatia and Southern Italy; the Four-lined or Leopard Snake (*Coluber quadrilineatus*, Pallas); and *Rhinechis scalaris* (Bonaparte), of Spain, Italy and Greece. Many of the European species are common to North Africa and Asia Minor as well.

There are a great number of very hardy serpents in the United States which give excellent results in captivity here without extra heat, some of them having bred under these circumstances. Those inhabiting the Southern States will, of course, require more heat than northerly species; but as single species have sometimes a very wide range, the temperature must be adapted according to that of the latitude in which the individual was caught, taking into account the possible elevation above the sea if captured in a mountainous district. Books which describe the snakes themselves will indicate the localities they affect. The Green-spotted Garter-Snake (*Tropidonotus ordinatus*, Boie), the Bull Snake (*Pituophis sayi*, Holbrook), the Chicken Snake (*Coluber quadrivittatus*, Holbrook), the Racer (*Coluber guttatus*, Lacepède), the Moccassin Snake (*Tropidonotus fasciatus*, Boie, Holbrook, &c., called by Catesby, in his 'Natural History of Carolina,' the "Brown Viper,"—the term "Moccassin" is applied to many species, venomous and non-venomous, but all reputed "deadly"),—the Black Snake (*Coryphodon constrictor*, Duméril and Bibron), the Spot-head (*Ischnognathus occipitumaculatus*, Storer), common in Nova Scotia, and the Seven-banded Snake (*Tropidonotus leberis*, Holbrook), are all exceedingly hardy reptiles, and resistant of cold. The Arrow-head

(*Conocephalus striatulus*, Dum. and Bibr.), the Chained Snake (*Pituophis catenifer*, Baird and Girard), the Triangle (*Coluber eximius*, Storer), Graham's (*Tropidonotus grahamii*, Baird and Girard) and Catesby's (*Heterodon catesbyi*, Gray) Snakes, the Punctured Snake (*Ablabes punctatus*, Dum. and Bibr.) of Canada, the Hog-nosed Snake (*Heterodon platyrhinos*, Baird and Girard), the Texan Grass-snakes (*Cyclophis vernalis* and *æstivus*, Günther), and the Ribbon Snake of the Rocky Mountains (*Tropidonotus saurita*, Schlegel), are rather more delicate, but not uncommon.

The Cape of Good Hope also sends us a few of this class; a little more exigent of sunny situations, it may be, but still calculated for reception into our canvas-covered frame. Such are the Black Snake (*Boodon infernalis*, Dum. and Bibr.), of that district, the Cape Snake (*Boodon lineatus*, Dum. and Bibr., a Constrictor), the Smooth-bellied Snake (*Homalosoma lutrix*, Dum. and Bibr.), *Coronella cana* (Smith), *Ablabes rufulus* (Dum. and Bibr.), *Lamprophis aurora* (Fitzinger), the Many-spotted Snake (*Coronella multimaculata*, Günther), the Cross-necked (*Psammophis crucifer*, Boie) and Hissing (*Psammophis sibilans*, Seba) Sand-snakes, and the Tigrine Snake (*Psammophylax rhombeatus*, Fitzinger) — not to be confounded with *Tropidonotus tigrinus*, a Japanese snake, one or two examples of which have reached this country alive; it closely resembles our Common Snake, with a small admixture of red in the colouring. The extraordinary *Rachiodon*, a snake whose teeth are in its stomach, is exceptionally tolerant of cold, but is rarely found.

There are many other serpents in different parts of the world which would be equally suitable, but unfortunately the distance which intervenes between their habitat and these shores makes the arrival of living specimens a matter of similar infrequency to that of angels' visits. We have already noticed this difficulty with the snakes of the antipodes. The Tigrine Snake of Japan, mentioned above, would in all probability prove capable even of naturalisation here. One of the commonest snakes in the *compos* of the River Plate—the climate of which would certainly adapt its ophidians for transference to our own—is *Coronella anomala*, a reptile not unlike our Smooth Snake in habit, but larger and much more gaily decorated; yet until quite recently the British Museum contained but one solitary specimen (and that a mutilated one), while not a single individual has yet been

brought home alive. D'Orbigny's Snake (*Heterodon d'orbignyi*) exists there in immense numbers also, a very handsome creature, black above, with a fine network of orange or pink lines, and beautifully mottled with red and black underneath; a singular stunted horn, in the shape of a trihedral pyramid, surmounts its nose. Merrem's Snake (*Liophis merremi*), again, one of the most variable of all serpents, roams through the whole of South America, and is as much at home in Buenos Ayres as it is in Berbice. Any of these might be kept under the same conditions as British snakes.

Some of the species, however, which have been given in this category will not stand hybernation here at once, but should be kept warm during their first winter at any rate, and coaxed to feed as freely as possible. It will be found that some are hardier than others, not in direct proportion to the temperature of their native land—witness the difference in this respect between the Python of West Africa and the Boa Constrictor; and as some tropical birds thrive here without shelter even better than their feathered relatives of a higher latitude, and will even after a time voluntarily seek exercise in the open air during the depth of winter, so these snakes may be gradually acclimatised, though of course in a much less degree than birds. On the other hand, buyers must not fail to note that snakes from the coldest quarters of the globe in which the tribe is represented, which have been kept long or bred in the heat of a menagerie reptile house, become practically tropical animals, and must be treated as such.

London, Paris, Berlin, Amsterdam, Rotterdam, Hamburg, Antwerp, and many other cities contain zoological establishments which comprise collections of reptiles, where opportunities of buying or exchanging frequently arise. In addition to such grand institutions as these, which are generally founded by scientific societies, very many towns, both in England and abroad, boast public pleasure-gardens, where a goodly number of foreign animals are displayed by way of attraction, and some snakes, susceptible of purchase or barter, will generally be found among them. Travelling exhibitions of wild beasts rarely have anything tempting, and moreover their proprietors purchase from the merchants who are always accessible to the amateur himself. These dealers, who can supply anything, from a

guinea-pig to a giraffe, and are at all times open to buy or sell anything in the shape of live-stock which comes in their way, are found in most of the large sea-port cities of England, France, Germany, Belgium, and Holland. Zoological gardens are furnished partly by these dealers, partly by miscellaneous purchases from private individuals coming home from abroad, and partly by donations of animals from their correspondents and from the collections of other societies of a similar nature. In the markets and about the wharves of those places situated on the coasts of distant lands at which vessels call, a few serpents, as well as other curiosities of the country, are often hawked for sale by vagabond loafers, ever on the alert to make hay of the unintelligent foreigner; if one is resident for any time in such a place, or has a friend living there to act as one's agent, these creatures may, of course, be bought at a reasonable price at "off times" when there is no demand; but since the great dealers have their own experienced collectors in all parts of the world and import animals wholesale, it not unfrequently happens in the case of a common snake, as with that of a parrot or monkey, that the casual visitor finds he has paid three times as much for his purchase abroad as he need have done at home, and has had all the risk, trouble, and expenses of conveyance into the bargain. Sailors often pick up these things very cheaply; not possessing the means of paying heavy prices for them, and so obtaining them at their own when the vendor sees there is no chance of making more, for one reason; and for another, because they "swap" certain articles—such as provisions, knives, and guernseys—which cost them but little, but which are of high value to the other parties. It must be confessed that the animals they covet are much more likely to take the form of birds, marmosets, raccoons or tiger-cats than serpents; nevertheless, Jack, with an eye to the main chance, will sometimes invest in such wares, especially if he has learned by experience that they may be disposed of at a good profit when he gets on shore. And I would strongly advise the reader who may live near any dépôt for mercantile shipping to make friends with some Custom House searcher, or other dock-official whose duty it is to board ships on their arrival, and get him to give a hint to any member of the crew in whose possession he may find a snake—or bird or beast, according to the would-be purchaser's fancy, for the advice

applies to all who wish to obtain living animals of any sort. The amateur will in this way be able to buy at a very moderate price, and will yet give the poor mariner a larger sum than he would probably obtain elsewhere; and will stimulate both him and his messmates, to whom he relates the issue of his venture, to increased endeavours in the same direction on future voyages.

Under whatever circumstances the negotiation may be conducted, it is most important to examine the interior of every serpent's mouth for canker before buying it. (The symptoms of this and other diseases will be found in a later chapter). Although this malady is not incurable, it is most commonly fatal, and it will be well to reject all specimens which exhibit indications of it, or to take them only on probation, to try the effects of treatment. An inspection of the mouth may be readily gained by grasping the reptile firmly behind the head, by which the quietest snake is generally provoked to distend its jaws in anger; careful note should be taken also of cuts or bruises about the lips, and of broken teeth, all of which prejudice its value. The body should be felt throughout its entire length for tumours, these occurring most often in the region of the neck or anus, and the under surface ought to be exposed, as terrible gashes are sometimes inflicted there by capture with a sharp hook. Injury of any part of the spine, a very serious lesion, may be detected, even when no external scar or wound is perceptible, by watching the whole movement of the snake's body through its curves, when—instead of *flowing* uniformly, like water through a serpentine channel, with as little evidence of the mechanism of the separate joints—a portion of the backbone will be seen to move stiffly in one piece, and some amount of deflection will usually be remarked just in front of or behind it. Fractures of the ribs (a common result of injudicious use of the tongs) are not easily discovered on external examination; and indeed there are many possibilities of disease and disaster of which the most cautious buyer must take his chance. If there be a choice of specimens, equal in other respects, it is better to select one which has recently shed its skin than one on the point of doing so; and when a history of their antecedents can be obtained, by all means take one which has been known to feed in confinement in preference to those presumably hungry after a fast which dates from their wild state.

It may happen that an amateur will occasionally find himself in a dilemma about a strange snake, being unwilling to purchase it if it should be poisonous, and not having sufficient confidence to determine its nature by looking in its mouth. In a doubt of this sort he may be decidedly recommended to buy, supposing the price to be suitable for such a specimen as he desires, and to take it to the nearest zoological establishment or herpetological authority and get it named. Should it be venomous, he will certainly be able to get something good in exchange for it, living venomous serpents being, as a body, more valuable than non-venomous, for obvious reasons. As was pointed out in 'The Zoologist' for April, 1882, there is no method of distinguishing between a poisonous and an innocent snake from their external characteristics, except those which lead to the recognition of the actual species. The absurd distinction of a black or red tongue, upon which I have heard a dealer insist, goes absolutely for nothing.

A few words on the two colubers which are found in this island may not be out of place here, since they will most probably be inmates of every student's vivarium, and will constitute the entire collection of many whose opportunities of procuring foreign specimens are limited.

The Common Ringed or Grass-snake (*Tropidonotus natrix*, *Natrix torquata*, &c.) has been too often described of late years to require any recapitulation of its salient points. It may be bought in the spring and summer for a shilling or eighteen-pence at most shops where gold-fish, white mice, &c., are sold; very large ones—and it attains a length of over four feet sometimes, the female being the larger—will cost two shillings or a half-a-crown. In its wild state it affects low-lying marshy grounds; is often observed swimming in a pond or stream, where it sometimes catches fish; and always drinks and bathes much in captivity. This is the most common snake in Europe, and is far more numerous in many parts of the Continent than it is here, extending over a very wide area, from Norway and Sweden to Sicily, and from Russia to Spain and Portugal. It is healthy and active in confinement; is undeniably handsome; and, though it hisses violently when frightened, never attempts to bite. Its best and favourite food is frogs, though it will also eat slugs, newts, fish, maggots, and earthworms when very

hungry; in the tropics I have known it eat raw meat. When newly caught it is prone to emit a very powerful and unpleasant odour when alarmed, an odour which no doubt constitutes its means of self-defence (why this species should not use its teeth like any other when attacked has never been explained), since animals, as well as man, betray disgust at it; but this propensity soon disappears as the reptile becomes tame, and with proper care Grass-snakes may be kept with as little offence as any. Their eggs are easily hatched in a conservatory, the hot-water cage, or other warm situation.

Very different in many respects is the Smooth Snake (*Coronella laevis*, or *austriaca*, *Natrix dumfriensis*, &c.). Rarely exceedingly two feet in length, and measuring on an average about eighteen inches, it is of much more slender habit and possesses a smaller and more lizard-like head than the last species; and its brown, speckled upper surface might be considered dull were it not for its exquisite metallic iridescence. Some specimens present a deep salmon or even crimson colouration of the ventral plates, such individuals being usually very pale above. Not the least offensive odour emanates from this little creature; it does not hiss much, but is generally very spiteful at first, biting furiously and repeatedly when touched, though the teeth inflict no more than the slightest scratch upon the skin. It very quickly becomes tame, however, showing no nervousness when strangers handle it, as the Grass-snake does; altogether it would be the preferable of the two, both as a pet and object of study, if its choice of food were not so rigidly limited to that most inconvenient article of diet—lizards. Hence the difficulty of keeping it, though it will exist a long time—a year or more—without feeding when there is a dearth of lacertine provisions; English specimens must assuredly be often reduced to the necessity of doing so in a state of freedom. Occasionally they will accept a slowworm, and it is said they have been known to take young mice and grasshoppers, but frogs are invariably refused. Like the Grass-snake, this *Coronella* occurs abundantly on the Continent, but with a curious limitation to certain districts; for instance, it is found in great numbers on the right bank of the Elbe, and less plentifully on the right bank of the Moselle, but is unknown on the left banks of those rivers; frequent in the north of Italy, rare in the centre and south of

that peninsula, common again in Sicily ; and so on. Its habitat extends farther northwards and higher up the sides of mountains than that of the Grass-snake ; it is found a considerable distance above Upsala in Sweden, and in confinement will be observed to exhibit a greater indifference to cold than any other snake. Writing twenty years ago, Dr. Opel remarked that its hybernation was neither so long nor so deep as that of other reptiles, and that it generally lay upon the surface, not seeking to bury itself. The first of which we have any record in this country was caught at the beginning of the present century in Dumfries, and nearly fifty years elapsed before the second capture, at Bournemouth, was chronicled ; then a few others were discovered at long intervals, gradually diminishing in duration, however ; and now, curiously enough, the Smooth Snake is *apparently* becoming more and more abundant every year, though in reality it is, of course, decreasing in numbers as man invades its domain, like everything else—the explanation being that its true nature is now more widely recognised, and that it is not so apt to be confounded with the Viper as it has been hitherto.

Any dealer on the Continent will supply Smooth Snakes ; here, I believe, they are only to be bought at Bournemouth—most English specimens are captured in the New Forest. Lizards for them may be procured at naturalists' shops. They are viviparous ; rarely drink or bathe ; and their choice of a dry location, like the Adder, to which they bear a superficial resemblance, leads to a little danger of confusion between the two sometimes, when a snake is found in such a situation. No one who has ever seen a Grass-snake in his life could possibly mistake it for the Viper, nor is there much likelihood of those who have studied the description of the Smooth Snake given in books, especially the arrangement of the plates on the head, falling into any such error, though they might find it easier to say which was which, in comparing the two together, than to name them without hesitation apart. To the ophiologist there is no likeness between them ; but three rough distinctions may be pointed out to those who have not made themselves acquainted with the generic characteristics which mark the classification. The Smooth Snake's head is long, narrow, and pointed—that of the Viper broad ; the scales on it are large and shield-like, while the Viper's are small ; and the black spots which run in a

double row down the back are oval and *separate* in the *Coronella*, but rhomboid and *confluent* in the Viper. Don't search for a V; every snake will show Vs and Xs and Zs too in its markings about the head.

(To be continued.)

NOTES AND QUERIES.

The Davis Lectures at the Zoological Gardens.—A series of lectures upon zoological subjects will be given in the Lecture Room in the Society's Gardens, in the Regent's Park on Thursdays, at 5 p.m., commencing on June 7th, "The Evolutions of Ungulate Mammals," Prof. Flower; 14th, "Our Snakes and Lizards," Prof. Mivart; 21st, "The Lamprey and its kindred," Prof. Parker; 28th, "Birds and Lighthouses," Mr. J. E. Harting; July 5th, "African Birds," Mr. R. Bowdler Sharpe; 12th, "South-American Animals," Dr. P. L. Selater; 19th, "Siberian Birds," Mr. Henry Seebohm. These lectures will be free to Fellows of the Society and their friends, and other visitors to the Gardens.

The Birds of Walney Island.—Whilst thanking you for having noticed in 'The Zoologist' so humble a publication as my 'List of the Birds of Walney Island and the Neighbourhood,' permit me to make two or three remarks in reply to the criticism on my pamphlet which appeared in your last number. I acknowledge that a more correct title would have been "The Birds of Furness," but I venture to doubt whether this would have conveyed to the majority of ornithologists as much information as the one I have selected; and I cannot help thinking, from your remarks on this head, that you have overlooked the fact that the word "neighbourhood" appears on my title-page. As regards the appearance of the Spotted Eagle, I fail to see the inconsistency of recording the fact of one having been found dead on Walney Island, whilst refusing to admit it to the ranks of British-killed specimens. I do not feel capable of deciding whether the bird in question was a wild specimen, or whether it was one that had died on board ship, and been consigned to the deep, or whether it had escaped from captivity. All I can positively assert is that it is a genuine specimen of *Aquila navia*, that it had not been very long dead when discovered, and that until recently it could at any time be seen at Barrow. I have given authorities for the occurrences of the rarer species of birds which have not come under my personal observation, that for the Swallow-tailed Kite being the 'Handbook of British Birds' (p. 88); and if I have erred at all I feel sure that it is rather in having omitted species which have a claim to be inserted

in my list than in the insertion of doubtful pretenders to that honour. Let me, in conclusion, express an earnest hope that the publication of my pamphlet, with your remarks thereon, may result in a greater interest being displayed in the Ornithology of a district which has hitherto escaped much notice.—W. A. DURNFORD (Tankersley Rectory, Barnsley).

MAMMALIA.

Marten in Co. Clare.—I received from Co. Clare some time ago a fine specimen of a Marten, whether *Martes abietum* or *M. foina* I am not quite certain, but incline to consider it the former. The following are the dimensions, which seem to me above the average:—Entire length, from tip of nose to end of tail, 29 in.; length of head, $4\frac{3}{8}$ in.; tail, 12 in.; ditto, to end of caudal vertebræ, $8\frac{1}{4}$ in.; fore limb from head of humerus to end of claws, $6\frac{1}{2}$ in.; hind limb, similarly measured, $8\frac{7}{8}$ in. Weight, 2 lbs. 5 oz.—J. FOLLIOTT DARLING (Bayview, Clonakilty, Co. Cork).

BIRDS.

Choughs in the Co. Waterford.—Although these birds have decreased very considerably since the time when a man who was commissioned by Dr. Ball to shoot him one brought him in *fourteen*, and though, even within my recollection, they were decidedly more numerous, yet they may still be found throughout the year at many points on the more precipitous portions of the coast of Waterford. They do not always shun human habitations, for I have repeatedly within the past month seen a pair feeding in the field beside the house of a friend who lives over the cliffs in which they breed. They were even observed there lately perched on the stable-roof. Their nest (in which there were no eggs on the 9th inst.) is placed in a fissure, or recess, at the top of a cave some thirty feet high. The sea forms the floor of this cave, except at low water. Over the nest is an overhanging arch of conglomerate. On April 23rd I obtained a Chough's nest with five eggs, the yolks of which were perfectly fresh, and of as deep a colour as the bird's bill. The nest was in a fissure over a cave, with rocks overhanging it again, and could only be approached with a long ladder. This nest is composed of fine stems and small pliant bents, chiefly of heather, of a much finer description than those used by any of the *Corvidæ*, except the Jay, though among the foundation sticks are coarser pieces of blackthorn. Internally it is composed of cow's hair, with a lining of sheep's wool. There is a very peculiar feature: attached to the bottom of the nest by a long twist of the same material is a regular little mop of wool, which lay among or upon the eggs, and must certainly have helped to conceal them and to keep them warm when the parent was absent. I have never heard of the weaving powers of a bird being employed in a similar device. On May 4th, while I was on the top of a lofty cliff, my friend in the boat

called out that he had marked a Chough to her nest below. I descended a sheer cliff on my rope, some eighty feet or upwards, when I reached another cliff at right angles to the first. Between the two was a narrow fissure, closed above by blocks and earth, and having a smaller block lodged in its mouth, leaving a very small opening. Through this I could just descry the nest high up at the back of the fissure. I had then to dislodge the block in the jaws of the fissure, and while I was thus engaged the Chough flew almost in my face, with her shrill scream, diving out beneath me. I then had to lodge myself sideways in the narrow fissure, depending on the sides alone, like a sweep in a chimney. At last I wriggled within arm's length of the nest, which contained but two eggs, one hard set and the other becoming addled. It was composed of materials similar to the nest above described, but had not the mop arrangement. Another nest, to which my gamekeeper descended on May 9th, contained also but two eggs, partially incubated, and was also in a crevice, into which he had to creep up, the rope being slackened, after his having descended a considerable cliff. Among the lining of cow's-hair was a rag of black worsted binding. These pairs of Choughs having stopped laying after producing but two eggs surprise me. I hope this does not indicate approaching sterility. The eggs of this species were formerly obtained with much greater ease. Two fishermen brought me twenty-two of them from the same locality in the year 1856, among which is an egg still in my possession, the ground colour of which is pure white, and its only markings are pale ash-coloured specks. It is, however, an undoubted Chough's egg. Choughs used, as stated to me by an old resident on the coast, to breed, as long as he could remember, in much lower caves than they now select; and some of the spots pointed out to me as having contained their nests could be reached without ladder or rope. As they have become scarcer they have also become wary, and, happily for them, climbers are not to be found now among the peasantry here. It is hard therefore to account for the diminution in this species. May it be long ere the shrill cry of the Chough ceases to be heard among the Waterford cliffs, while the eye follows its graceful, buoyant flight. Now, closing its wings, the bird seems dropping into the sea, when, suddenly spreading them again, it rises with its peculiar scream, its companion dropping as it rises, and *vice versa*. Thus a pair of Choughs may be distinguished at a great distance by their peculiar flight. Their food seems to be chiefly small insects, which their fine-pointed bills are suited to take up. They delight in an ant-hill, and I have found a caterpillar in the stomach of a Chough. In Irish the Chough is called "Cawg." They are otherwise called here "Redshanks" or "Redbills."—RICHARD J. USSHER (Cappagh).

The Ortolan Bunting in Lincolnshire.—On the afternoon of May 3rd, when walking across a newly-sown field of oats near the Humber, I noticed

a small finch-like bird occupied in picking the scattered grains from the surface, which were rapidly husked and then swallowed. It readily allowed me to approach within ten yards, and sometimes nearer. On examining it through the binocular I saw at a glance it was an adult female Ortolan. I watched her for nearly half an hour, sometimes putting her up, after which she never went far, not beyond thirty or forty yards, commencing to feed greedily on alighting. It was astonishing the number of oats the little creature managed to stow away within a short time. The head and nape were light grey, and contrasted strangely with the rest of the upper plumage. There was a patch of brown on the forehead, and streaky patches of the same colour from the bill running below and beyond the eye; a dusky brown spot also on each side of the breast, like the commencement of a collar. In flight the outer tail-feathers showed a considerable proportion of white. The Ortolan Bunting is a well-known migrant across Heligoland in the latter part of April or early in May, and again in August and September. Its ordinary line of migration is far to eastward of these islands, and on the opposite side of the North Sea. I can only conjecture that the very strong north-east winds of the last few days have blown it far to westward of its course and on to our east coast. The first week in May is just the time when this might happen. I visited the same field the next morning, hoping to find the little stranger still there; the quest was, however, not successful, although I was rewarded by watching five Dotterel in the adjoining marsh. A very pretty group they formed, their exquisite plumage relieved against the lush dark green of the pasture.—JOHN CORDEAUX (Great Cotes, Ulceby).

Melanism in the Bullfinch.—A short time since I saw at the house of an Edinburgh bird-fancier a Bullfinch (*Pyrrhula vulgaris*) in singularly abnormal plumage. It was wholly black, tinged with a silvery grey, except the crown of the head, which was snowy white. No data were forthcoming as to when this change of plumage had been assumed, but as it was moulted in the house, it probably became black in its last moult. I have seen other Bullfinches which had assumed a black and white garb; but never before saw a complete white crown, though I have twice known wild hen Bullfinches caught in Oxfordshire which had a sprinkling of white on their black caps. With regard to melanism in the Bullfinch, I have never seen a black Bullfinch that had not become so wholly in confinement. It is sometimes due to a hemp diet, by which I produced it in a fine male myself; but melanism occurs in both Goldfinches and Bullfinches, and also in Sky Larks, which have never been kept on hemp-seed. In the Sky Lark, melanism seems to be wholly the result of artificial conditions; the wings of black Larks are often partially white. In the Goldfinch, melanism chiefly occurs in old birds, in a state of freedom; but patches of black feathers sometimes mottle the breast of wild finches, even of yearling

birds; and some birds become almost entirely black in moult indoors. In the House Sparrow, (Sabine's) Snipe, and Redwing (as recorded by Mr. J. Whitaker), the only other British melanisms that occur to me, this abnormal plumage only occurs in wild birds; and the same is probably true of gular melanism, as illustrated by the Bramblings figured in Rowley's 'Ornithological Miscellany.'—HUGH A. MACPHERSON.

The Scientific Name of the European Thick-knee.—For years ornithologists have been content to designate this species by Temminck's name, *Ædienemus crepitans*, bestowed by him in his 'Manuel d'Ornithologie,' ii., p. 521 (1815—1820). But that love of change which many scientific writers of the present day appear to be unable to resist, coupled, it must be said, with a desire to apply conscientiously the Stricklandian code of rules for zoological nomenclature, has resulted in this time-honoured name being discarded, and a fresh one substituted. Mr. Dresser, in his excellent and authoritative work on the 'Birds of Europe,' writes this species down as *Ædienemus scolopax*, S. G. Gmelin, and doubtless, on the strength of his opinion, many writers will now follow his lead. It seems to me, however, that this name is wholly inadmissible, since it directly contravenes the rule which provides that "specific names when adopted as generic must be changed." S. G. Gmelin's specific name *Scolopax* has been adopted as generic, being now *omnium consensu* restricted to the Woodcocks; therefore it must be changed. It might have been well to let *crepitans*, Temm., stand; but if an older name can be found to which a recognisable description is attached, the rigorous law of priority demands its adoption. Such a name is that of Piller and Mitterpacher, who in 1782 described our Thick-knee (*Iter per Pesezanam Sclavoniæ provinciam*, p. 26, tab. iii.) as *Charadrius illyricus*. Although in the Latin description which these authors have given of their bird some few errors are apparent, the figure (tab. iii.) shows that the species referred to is the European Thick-knee. If Temminck's name, therefore, is to be discarded, *Ædienemus illyricus* (Piller and Mitterpacher), for the reasons given, should be adopted in preference to that proposed by Mr. Dresser.—J. E. HARTING.

The Marsh Tit in Oxford.—Strolling along St. Giles, Oxford, one morning in Nov., 1882, about 8 a.m., I came across a Marsh Tit busily hunting for insects on the panes of the lamp-posts; flitting from side to side, he clung to the iron framework whilst the crannies were carefully explored. I had never seen any Titmice foraging on lamp-posts before, and therefore venture to record it. The Marsh Tit loves to feed on the small beetles that haunt roses; at times I have seen it pitch on the high road in order to search for insects in horse-droppings. It is even more partial to the seeds of sunflower than *Parus major*. In autumn it feeds largely on thistle-seeds, and this is especially the case, I think, in Epping Forest.—H. A. MACPHERSON.

Hybrids amongst Birds.—I confess I am not a great believer in Blackbird-and-Thrush hybrids. Professor Newton (whose 'Yarrell' I have not at hand) mentions one such instance which is authentic, I think, but I believe that in many cases partial melanisms of the Thrush have been thought to be hybrids. I have an instance of a Thrush which turned nearly black in confinement, its owner thinking that in his absence it had been changed; but with proper food it reverted to its normal colour. Other incipient melanisms of the same kind are frequently due to hemp-seed. In the British Museum is a supposed Blackbird-and-Thrush hybrid, with the light parts well defined. Mr. Christy has very likely seen it: it is in the British bird-room, and was, I think, presented by Mr. A. D. Bartlett, having probably been obtained in the neighbourhood of London. I have seen a Blackbird, killed at Reigate, with large patches of brown upon it, very singularly marked, yet the brown not the mottled brown of a Thrush. A cock Blackbird will occasionally retain large patches of the brown plumage of immaturity to the spring following its birth, when it would be about a year old, as some young Rooks retain their nasal bristles a twelve-month or more. A Blackbird in this state might at first sight be supposed to be a hybrid. If your correspondent were to refer to the catalogues of the Crystal Palace bird shows, I think he would find one or two supposed hybrids. In seeking for instances of hybridism we must remember that hybrids may sometimes take after one or other of their parents, as in the Grey and Carrion Crow. Hybrids between the Greenfinch and Linnet have repeatedly occurred, differing very much in plumage; yet probably for every one which has been recognised, several, from their resemblance to one or other of their parents, have escaped notice. Many continental collections, in countries where the *chasse aux grives* is largely carried on, as at Berlin, Turin, and Marseilles, have the most curious varieties of the Thrush tribe, including possibly some hybrids. The subject is interesting, owing to the dissimilarity of the two birds, though indeed they are not more dissimilar than the Greenfinch and Linnet, or than the Pochard and Nyroca, which have several times been known to cross in a wild state; and other examples might be cited among the game-birds. Probably among closely-allied species there are far more hybrids than we are aware of. My father has a live Goose which pretty conclusively shows that the Bean Goose will, in a wild state, occasionally cross with the White-fronted Goose, and, if this is the case, how much more likely that it should cross with the still more nearly-allied Pinkfooted. Many Redpolls occur in Norfolk and elsewhere, which are intermediate between the common Redpoll and the Mealy; and it is practically impossible to say which they are. The like has been observed among the Siberian Goldfinches, but the difficulty melts away if we allow that these intermediate birds are hybrids.—J. H. GURNEY, Jun. (47, Eversfield Place, St. Leonards).

Swift returning to former Nesting-place.—Between 7 and 8 p.m. on the 27th April a Swift made its appearance here at Looe, and, from its actions, I think there can be no doubt it must have been here in former years. There was a hole in the wall of our old church which has for a long series of years been used as a nesting-place for Swifts. Since the autumnal migration of last year the old church has been pulled down, and the walls of the new church and framework of the roof have been rebuilt. My attention was first called to the Swift by the many attempts it made to find the old hole, having all the action of being about to dart into the hole as I have seen the Swifts do for years past; this action was continued, I think, during my observation of half an hour, as many as fifty times, a very cold east wind blowing at the time. I think this clearly shows great instinct to cause the bird to return to its old quarters, but little reason in not finding out more readily the hole had been removed. When I left off observing, the bird was still pursuing the same course. I did not see another Swift until the 4th May, again a single bird. On May 8th there were four Swifts here.—STEPHEN CLOGG (Looe).

Iceland Gull at Aldeburgh.—Writing under date of Dec. 14th, 1882, Mr. Whistler, of Aldeburgh, offered me, in the flesh, a fresh-killed example of the Iceland Gull, killed in the neighbourhood, "in magnificent plumage." Mr. Whistler adds in his note, which at the time I mislaid, that so fine an example had not been obtained locally since 1860. If I recollect right the last Aldeburgh specimen was obtained in 1876, at least so far as records go.—H. A. MACPHERSON (Carlisle).

Cormorants resorting to Fresh-water Lake in Summer.—The abundance of barren individuals of these birds formerly misled me much. Twenty years ago, and probably to the present day, a number of Cormorants inhabited a fresh-water lake at Castlecoote, near Enniskillen, during the summer. The lake is about forty miles from the sea. The birds roosted on a low plantation of alders (?) on an islet, and it was a bitter disappointment to me, as a birdsnesting schoolboy, to find they did not breed. I was an early enough visitor, too, since I have taken Heron's eggs on the lake in February, and watched the nests of the naturalised Greylag Geese on these waters frequently. Year after year the Cormorants were there, whether barren or immature I am unable to decide, but I never obtained their eggs. I remember also to have examined a rookery on the shores of the lake, in the hope of finding Cormorants there, for, as Thompson has remarked (vol. iii., p. 244), they sometimes build on trees.—H. CHICHESTER HART (Dublin).

Pale Variety of the Jay.—A Jay, lately killed, has come into my possession in which all the parts usually brown are nearly white, and much of the usual black is also replaced by white, as is also a part of the blue

patch on the wings. The bill is also white. The eyes were of the usual colour. But the most interesting feature is that where the feathers are usually black in the tail, in this specimen a blue pattern is to be seen, similar to that on the wings. I have seen and handled many Jays, but I never remember seeing one in which there was any remarkable variation of plumage, the *Corvidæ*, as a rule, being less liable to variation, in my experience than many other families of birds.—HENRY LAVER (Colchester).

A White Magpie.—On March 2nd I had the pleasure of examining a white Magpie in the possession of Mr. Skinner, of River Street, N. Its owner courteously showed me the bird, and informed me that it was taken from the nest near Sittingbourne, Kent, in 1882. It was not as white as the albino Jay in the Western Aviary of the Zoological Society, but was almost entirely white, the forehead and both primaries and secondaries, however, being tinged with black. The beak and irides were normal: the legs flesh-coloured.—H. A. MACPHERSON (Carlisle).

Ivory Gull on the Lincolnshire Coast.—On March 29th, 30th, and 31st I saw an Ivory Gull (*P. eburnea*) between Great Grimsby and Cleethorpes. It was easily distinguished from other large Gulls when on the wing by its slow and steady flight (resembling that of a Heron rather than a Gull), and the white colour of the plumage, which was then very conspicuous. When picking up food on the shore its action was peculiar; it held its body in a horizontal position and dropped its head and neck, so that when the beak touched the ground the head and neck formed a right angle with the body.—T. FISHER (Erfurt Lodge, Greenwich).

Shore-birds on the Humber Flats in May.—During the afternoon of May 16th, I saw a flock of a dozen Grey Plover on the muds, all apparently in breeding plumage; seven Whimbrel in one flock, and several others calling. I also watched, with my telescope, two Oyster-catchers feeding within fifty yards of the embankment. I mention this especially, as it is rarely I have had an opportunity of seeing these pretty birds at so short a distance. They were very busily employed searching the shallow gutters which everywhere intersect the ooze, boring like Godwits with their bright orange beaks, and appeared to be feeling for sandworms. When successful in touching their prey they displayed the greatest eagerness to secure it, plunging their beaks up to the forehead in mud and water, and wriggling their head and neck. They rose at last with a shrill "peep-peep," flying directly from me to the tide-edge, the pure unsullied white of the lower back, tail-coverts and tail, and expanded wings, having exactly the appearance of an open fan, the broad end backwards, of pure white colour, edged with black. Common as the Oystercatcher is at some seasons on the sandy flats of our coast, and at Spurn, it is very rarely indeed that I have seen them so far within the Humber.—JOHN CORDEAUX (Great Cotes, Ulceby).

Black-game killed on the Railway.—A bird-stuffing engine-driver in our parish showed me a brace of Black Grouse picked up on the line near Thornhill, Dumfries, after having been knocked down by an engine. The black cock turned the scale at 3 lbs. 5 oz. Is not this method of destruction unusual? The grey hen was crushed considerably, the spine being broken.—H. A. MACPHERSON (Carlisle).

Grey Skrike and Waxwings in Aberdeenshire.—A specimen of the Great Grey Shrike was shot at Banchory, near Aberdeen, on February 8th, and a pair of Waxwings also were obtained near Aberdeen. Another Waxwing was shot near Edinburgh some time in January last.—J. WHITAKER (Rainworth Lodge, Mansfield).

Swallows returning to their old Nests.—In Gould's 'Birds of Great Britain' there is an account of a House Martin returning to its old nests, to which my name is attached, which I communicated to Mr. Gould some thirty years ago when a lad at school. I was asked the other day if this was authentic, and think it right to let it be known that I believe it is *not*, but only a trick played by one of the boys.—PHILIP CROWLEY (Croydon).

[If our correspondent has good reason to believe that he was deceived, it is of course desirable to correct the statement made by him in good faith. At the same time we may remark that there is nothing at all improbable in the story. It has been proved many times, by catching the birds and marking them, that Swallows and Swifts return year after year to their old nests, and details of a satisfactory experiment of this kind with a pair of Chimney Swallows at Stroud will be found reported in 'The Field' of June 4th, 1881.—ED.]

Mealy Redpoll with curved Mandibles.—I have recently received a Mealy Redpoll, apparently an old female, netted at Skipton, Yorkshire, in which both mandibles curve over one another in Crossbill fashion. I do not recollect anything similar recorded of this species, and therefore venture to mention it.—H. A. MACPHERSON (Carlisle).

REPTILES.

Snakes eating Fish.—One of my Snakes, *Coluber natrix*, is sufficiently tame to feed from my hand. About a fortnight ago he captured a Stickleback in a large aquarium, and experienced little difficulty in devouring it, though the spines were erect. The fish was devoured head foremost. Yesterday the Snake, which in girth is not greater than a large Stickleback, enjoyed a similar repast. Another Snake of the same species several times tried to swallow another of these prickly little fish, but could not do so as it had seized the fish by the tail. The Snakes caught the fish without any assistance from me.—C. A. WITCHELL (Stroud).

ARCHÆOLOGY.

Protecting Poultry from Foxes in Scotland.—In my copy of Childrey's 'Britannia Baconica' (1660), a manuscript note runs as follows:—"Singularityes of Scotland. In all the hill country, and where there is much poultry, specially in open moores, every house doth nourish a young fox, and then, killing the same, they mixe ye flesh thereof amongst ye meate they give ye fowle and other small bestiall, by meanes whereof they are preserved from ye attempt of ye fox for 2 [? 12] moneths after, who smelling that meate in their craw will not touch ye bird or beast." At the foot of the opposite page are the initials and date "3 Julij A. 1667, W. M." in the same handwriting. There are a considerable number of other MS. notes, evidently taken from various books, but no reference is given for the above.—OLIVER V. APLIN (Great Bointon, near Banbury).

Origin of the name "Twite."—In Yorkshire the Twite is called "Twate-finch." "Thwaite" is an old English word meaning a piece of ground cleared of timber—ground, we may presume, that would be favourable to the bird. Can any one say whether the present name of the bird has been derived from this word "thwaite," or from one of its notes?—GEORGE ROBERTS (Lofthouse, Wakefield).

[Mr. H. T. Wharton, in his remarks on the meaning of English bird-names ('Zoologist,' 1882, p. 442), considers that the name "Twite" is one of those "which plainly indicate the note they describe," and we see an obvious correlation with the words "twit" and "twitter."—ED.]

Spoonbill and Shoveller.—It is somewhat curious to remark that as in the sixteenth and seventeenth centuries the Spoonbill, *Platalea leucorodia*, was known as "Shovellard" (*vide* 25 Henry VIII., cap. 11, and 'Zoologist,' 1877, p. 428), so now-a-days, in the Otmoor district in this county, the Shoveller, *Anas clypeata*, is known as the "Spoonbill."—OLIVER V. APLIN (Great Bointon, near Banbury).

OBITUARY.

The late Mr. W. A. Forbes.—Mr. William Alexander Forbes, Fellow of St. John's College, Cambridge, Prosecutor to the Zoological Society of London, and Lecturer on Comparative Anatomy to Charing Cross Hospital, whose untimely death on the Niger has been lately announced, was born at Cheltenham on June 24th, 1855, and was the second son of Mr. J. S. Forbes, the well-known railway director. He was educated at Kensington School and Winchester College. On leaving Winchester in 1872 he passed a year at Aix-la-Chapelle, studying German, and then became a student of the University of Edinburgh, where he pursued the regular medical course, paying special attention to Zoology and Botany, and commencing collections

of insects and plants. In 1875 Forbes transferred his residence to London, and entered himself as a student of London University with the idea of taking a medical degree in the metropolis. By the advice of the late Prof. Garrod and other friends Mr. Forbes was induced in October, 1876, to leave London and to become an undergraduate of St. John's College, Cambridge, where he was subsequently elected Scholar, and took his B.A. degree with a First Class in the Natural Sciences Tripos in 1879. The post of Prosector to the Zoological Society of London having become vacant in October, 1879, by the lamented death of Prof. Garrod, Mr. Forbes was appointed to that office in the January following. Mr. Forbes entered upon the duties of his office with characteristic energy, and during the three following sessions of the Zoological Society brought before the scientific meetings a series of valuable communications derived from his studies of the animals that came under his examination. He especially directed himself to the muscular structure and voice organs of birds, in continuation of the researches of his predecessor Garrod on the same subjects. In the summer of 1880 Mr. Forbes made a short excursion to the forests of Pernambuco, Brazil, of which he published an account in 'The Ibis' for 1881. In July, 1882, he left England on what promised to be a splendid opportunity of visiting the eastern tropics with every advantage and without much risk. Detained at Shonga—a station 400 miles up the Niger below Rebba—by the breaking down of his communications, Mr. Forbes fell a victim to dysentery on January 14th last, thus adding another name to the long list of martyrs of science in that deservedly dreaded climate. Mr. Forbes's published works consist chiefly of papers in the 'Proceedings of the Zoological Society' and 'The Ibis,' altogether about sixty in number. He was editor of the memorial volume of collected scientific papers of his predecessor Garrod, and just before he left England in July last had finished the last sheets of an excellent memoir on the anatomy of the Petrels—since published in the 'Zoology of the Challenger Expedition.'—'*Nature*.'

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 19, 1883.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Messrs. T. W. Coffin, F. H. Collins, C. F. De Laune, D. Morris, J. Jardine Murray, and Hon. J. B. Thurston were elected Fellows of the Society.

A paper was read by Sir John Lubbock "On the Sense of Colour among some of the Lower Animals." He stated that some years ago M. Paul

Bert made a series of interesting experiments with the common *Daphnia*, or Water Flea, which is abundant in ditches and pools. He exposed them to light of different colours, and thought himself justified in concluding from his observations that their limits of vision, at both ends of the spectrum, are the same as our own, being limited by the red at one end and the violet at the other. In a previous communication Sir John Lubbock showed, on the contrary, that they are not insensible to the ultra-violet rays, and that at that end of the spectrum their eyes were affected by light which we were unable to perceive. These experiments have recently been repeated by M. Merezkowski, who, however, maintains that though *Daphnia* prefers the yellow rays, which are the brightest of the spectrum, it is, in fact, attracted, not by the colour, but by the brightness; that, while conscious of the intensity of the light, it has no power to distinguish colours. Given an animal which prefers the brightest rays, it may seem difficult to distinguish between a mere preference for light itself and a preference for any particular colour. To test this, however, Sir John Lubbock took porcelain troughs about an inch deep, eight inches long, and three inches broad. In these he put fifty specimens of *Daphnia*, and then, in a darkened chamber, threw upon them an electric spectrum, arranged so that on each side of a given line the light was equal, and he found that an immense majority preferred the green to the red end of the spectrum. Again, to select one out of many experiments, he took four troughs and covered one-half of the first with a yellow solution, half of the second with a green solution, half of the third with an opaque plate, and he threw over half of the fourth a certain amount of extra light by means of a mirror. He then found that in the first trough a large majority preferred being under the yellow liquid rather than in the exposed half; that in the second a large majority preferred being under the green liquid rather than in the exposed half; that in the third a large majority preferred the exposed half to that which was shaded; and in the fourth that a large majority preferred the half on which the extra amount of light was thrown. It was evident that in the first and second troughs they did not go under the solution for the sake of the shade, because others placed beside them, under similar conditions, preferred a somewhat brighter light. It seems clear, therefore, that they were able to distinguish the yellow and green light, and that they preferred it to white light. No such result was given with blue or red solutions. In such cases they always preferred the uncovered half of the trough. It is, of course, impossible absolutely to prove that they perceive colours, but these experiments certainly show that rays of various wave-lengths produce distinct impressions on their eyes; that they prefer rays of light of such wave-lengths as produce upon our eyes the impression of green and yellow. It is, of course, possible that rays of different wave-lengths produce different

impressions upon their eyes, but yet that such impressions differ in a manner of which we have no conception. This, however, seems improbable, and on the whole, therefore, it certainly does appear that *Daphnia* can distinguish not only different degrees of brightness, but also differences of colour.

The Rev. A. E. Eaton gave a digest of an extensive monograph of the *Ephemeridæ*, or Mayflies (part 1). In this the subject is prefaced by an historical account and general review of the group, with a tabular conspectus of the genera at present known, and descriptions of the genera and species of the first group (*Palengenina* to *Pentagenia*).—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

May 1, 1883.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read an extract from a letter addressed to him by Mr. W. L. Crowther respecting the possibility of obtaining living specimens of the Thylacine of Tasmania.

The Secretary exhibited, on behalf of Mr. H. Whitely, the skin of a Bird of Paradise (*Diphyllodes gulielmi*) from the island of Waigiou, which was believed to be the second example of this rare species yet obtained.

The Secretary exhibited a set of Radde's International Colour-Scales, and explained the way in which it was intended to be used.

A communication was read from Mr. F. Moore, containing the second part of a monograph of the sections *Limnaina* and *Euplœina*, two groups of Diurnal Lepidoptera belonging to the subfamily *Euplœina*. The present paper contained the descriptions of many new genera and species belonging to the group *Euplœina*.

Mr. Alfred Tylor read a paper on the coloration of animals, showing that the character of the ornament or decoration differs in the two great divisions of the animal kingdom—the Invertebrata and Vertebrata. Mr. Tylor pointed out that the law of emphasis, well known in Architecture, was, in his opinion, applicable to Natural History, and showed that the prominent characters of the animal are picked out in colour in precisely the same way whenever colour is present. He divided the subject into several sections, and exhibited illustrations of the more important families in coloured diagrams.

A communication was read from Dr. O. Boettger, of Frankfort-on-the-Main, containing the description of new species of land-shells of the genus *Clausilia*, from the Levant, collected by Vice-Admiral Spratt.

Mr. W. F. Kirby gave an account of a small collection of Hymenopterous and Dipterous insects obtained in the Timor-Laut group of islands by Mr. H. O. Forbes.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 7, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President in the chair.

Messrs. Francis F. Freeman (8, Leigham Terrace, Plymouth), Frederick Charles Lemann (Blackfriars House, Plymouth), and Frederick W. Smith (Hollywood House, Blackheath Point, Blackheath, Kent), were balloted for and elected Members of the Society.

Mr. R. M'Lachlan exhibited a specimen of *Polistes hebraeus*, Fabr., which was captured in one of the London Docks on Saturday last; the specimen was in a dormant state, but revived from the heat of the meeting-room. These wasps had been commonly seen on a ship returning from Calcutta, which contained a quantity of bamboos as dunnage; Mr. M'Lachlan thought these probably contained nests of the *Polistes*.

Mr. T. R. Billups exhibited specimens of *Phaogenes homochlorus*, Wesm., and *Hemiteles incisus*, Brdg., captured at Chobham last summer.

Mr. Billups also exhibited a further specimen of the Orthopteron exhibited at last meeting, and which he had identified as *Copiophora cornuta*, DeG., a Central American species.

Dr. D. Sharp exhibited a preparation showing the pro- and meso-thoracic membrane of a large *Elatér* (*Chalcolepidius porcatus*, Linn.), in which the prothoracic breathing orifices were of a hitherto unobserved structure. The two stigmata were closed by hinged, horny trap-doors, very similar in action to the lid of a trap-door spider's nest.

The Secretary exhibited, on behalf of Mr. G. S. Saunders, a microscopic instrument which greatly facilitated the examination of pinned or living specimens under the microscope without alteration of the stage.

Mr. J. B. Bridgman communicated a paper entitled "Further Additions to Mr. Marshall's Catalogue of British Ichneumonidæ," in which sixteen species were referred to as new to Britain, and twenty-six species described as new to science.

April 4, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

The President announced the sudden death, on March 27th last, of Prof. P. C. Zeller, of Stettin, who had been an Honorary Member of this Society for upwards of thirty years.

Messrs. Lewis F. Hill (3, Edwardes Terrace, Kensington), and Louis Péringuey (Rondebosch, Cape Town), were balloted for and elected Members of the Society.

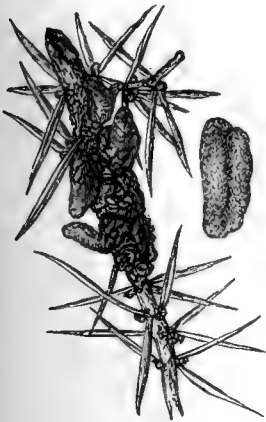
Mr. W. F. Kirby exhibited specimens of *Acridium succinctum*, Linn., received from Mr. T. Davidson, who stated that it was this species of locust which had lately been causing great destruction in the Deccan and other parts of India.

Prof. Westwood called attention to a communication in a Sussex newspaper by a gardener named Page, stating that he had found a new cause of the potato disease. On examination by Prof. Westwood, this supposed cause was found to consist in the attacks of *Polydesmus complanatus*, L. After Guérin-Meneville's and Curtis's publications on the numerous insects, myriapods, &c., which are found living in the diseased potatoes, he was surprised that the now well-known potato disease should be attributed to these attacks.

The Rev. A. E. Eaton exhibited a patent revolving object-holder, used by mineralogists, affording great facilities in adjusting the position of insects subjected to microscopical examination, thus allowing of the examination of every part without removing the specimen.

Sir Sidney Saunders communicated remarks on the characters of the vegetable-feeding fig-insects.

Mr. E. A. Fitch exhibited leaf-rosette galls of *Cecidomyia violæ*, F. Löw, found in Epping Forest on Sept. 23rd last, by Mr. Henry Corder, on *Viola sylvatica*. Dr. Löw described the gnat as new in 1881 (Verh. z.-b. Ges. Wien, xxx. 34), from specimens bred from similarly formed galls on *Viola tricolor*. Mr. Fitch also exhibited a bright red bean-like Aphis gall on a pinna of *Pistacia lentiscus* from Cannes, received from Dr. Cobbold; its maker is probably *Aploneura lentisci*, Licht.? (cf. Ann. Soc. Esp. Hist. Nat., vii. 471-4). A curious new cecidomyioid galls on the woody twigs of *Juniperus* was also exhibited. Mr. Fitch had received specimens two days previously from Mr. W. C. Boyd from Mentone; the galls were very succulent, and greatly resembled a cluster of full-fed *Ixodes* or miniature brown leather pouches attached round the juniper twig, the bunch consisting of galls extending to the length of an inch along the twig; the galls were easily detached from the twig at their bases, and the orange-red gnat larvæ liberated, hence they probably undergo their metamorphoses in the ground.



Mr. H. Goss exhibited specimens of *Pimelia angulata*, Fabr., obtained by Mr. H. B. Forman in the temple of the Sphinx, near the Pyramids of Ghizeh, Egypt.

Mr. A. S. Olliff read a memoir "On a small collection of Clavicorn Coleoptera from North Borneo," made by Mr. W. B. Pryer.

Mr. P. Cameron communicated some "Descriptions of new Genera and Species of Hymenoptera," from the Sandwich Islands, from Britain, and from Brazil.

Mr. W. F. Kirby read some "Notes on new or little-known Species of Hymenoptera, chiefly from New Zealand."

May 2, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

Messrs. E. A. Butler (Arnold House, University School, Hastings) and W. H. Miles (33, Paris Street, Palace Road, Lambeth, S.E.) were balloted for and elected Members of the Society.

The President, in the course of an address, observed:—"We this day complete the fiftieth year of our existence. It was on the 3rd May, 1833, that nine gentlemen—Messrs. Children, J. E. Gray, G. R. Gray, Hope, Horsfield, Rudd, Stephens, Vigers, and Yarrell—met and resolved to found the Entomological Society of London. No time was lost; for on the 22nd of the same month the first General Meeting was held at the Thatched House Tavern, the Rev. Wm. Kirby was chosen Honorary President, 103 Members were enrolled, and a Council of thirteen were chosen to complete the organization of the Society and prepare rules for its government. Rooms were taken at No. 17, Old Bond Street, and on the 4th November, 1833, under the Presidency of Mr. Children, the then Secretary of the Royal Society, a code of Bye-Laws was adopted, and our first scientific meeting was held. Of the Original Members, six, and six only, still survive—Prof. C. C. Babington, the Rev. Leonard Jenyns (now Blomefield), Sir Sidney S. Saunders, Mr. W. B. Spence, Mr. G. R. Waterhouse, and Prof. Westwood. Of these Mr. Waterhouse has the additional distinction of having been one of the original Council, and the first Curator of the Society. Our meetings continued to be held at 17, Old Bond Street from 1833 until 1852, when we removed to No. 12, Bedford Row; during nine sessions commencing in 1866, by the kindness of the Linnean Society, we assembled in Burlington House, but our Library remained at Bedford Row. In 1875 the Library and place of meeting were again united in this house; and though the building operations now in progress have prevented us from indulging in any celebration of our Jubilee, we shall soon be in the enjoyment of improved accommodation, and I hope it may be long before the Society has again to change its quarters. 'The Entomological Society of London is instituted for the improvement and diffusion of Entomological Science.' From first to last, this has been our only object. To bring fellow-workers into friendly communication, and facilitate the interchange of ideas, to extract the hidden knowledge of secluded students, to provide a Library for consultation, to encourage observation and experiment, and to publish the results for the benefit of all whom they may concern—such is our aim, the very reason of our being. And I venture to assert that the Society has succeeded in its object. If any be inclined to doubt, I refer him to the thirty volumes of our 'Transactions,' to the record of 'Proceedings' at our more than 600 meetings, as proof of the activity and the unfailing ardour with which the Society has now for half a century devoted itself to the diffusion of entomological science.

"I have to suggest that Prof. Westwood be made titular Life-President of the Society. There is no man to whom we as a body owe so much. An Original Member, he has never failed us; during the crucial period of our childhood he was the motive power, the life and soul of the Society; for fourteen consecutive years he was Secretary, and for part of that time he was Curator also. The Council has seldom been complete without him; he has been Vice-President times without number, and during six years (1851-52, 72-73, 76-77) he was our President. Whilst he resided in or near London, he rarely missed one of our meetings; even Oxford cannot keep him away from us; and there is not a single year from first to last that he has not been a contributor to our 'Transactions.' From 1827 to the present time his pen and his pencil have never been idle; his papers are scattered broadcast over the scientific publications of this and other countries; and to single out a few of his more important works it is enough to mention the 'Introduction to the Modern Classification of Insects' (1839-40), the 'Arcana Entomologica' (1841-45), the 'Cabinet of Oriental Entomology' (1848), the 'Genera of Diurnal Lepidoptera' (1852), and the 'Thesaurus Entomologicus Oxoniensis' (1874). What do we not owe to Westwood's 'Introduction'? has it not been to many of the present generation of entomologists the very fountain and sole source of their scientific views? His labours have ranged over the whole domain of our Science. Specialists may excel in their own particular groups, but as a general entomologist have we a man to compare with him? I ask you to confer upon him a title which will be a standing record of the esteem in which we hold him, and which throughout the evening of his days shall assure him of our affectionate respect."

This proposal was carried by acclamation, and Professor Westwood was declared Honorary Life-President of the Society.

A Special Meeting was then convened, pursuant to a requisition presented to the President and Council, for the consideration of certain proposed alterations in the Bye-Laws, which had been read at the three preceding meetings of the Society. Alterations were decided upon to the effect that in future no Subscriber or Corresponding Member shall be elected; and that every Member who has paid the annual contribution shall be entitled to a copy of the 'Transactions' published during the year.—E. A. FITCH,
Hon. Secretary.

NOTICES OF NEW BOOKS.

A Handbook to the Birds of Burmah, including those found in the adjoining State of Karennee. By EUGENE W. OATES. Vol. I., roy. 8vo, pp. 431. London: Porter, and Dulau & Co. 1883.

FEW of our readers, especially if they be members of the British Ornithologists' Union, require to be reminded that Mr. Oates has long been engaged on this important work, which a residence of some years in Pegu and a close study of the avifauna of British Burmah have qualified him to undertake. On his return to England two years since he brought back with him a large collection of bird-skins, with voluminous field-notes relating to all the species collected or observed; and the revision of all this material has resulted in the appearance of the first volume of his projected work.

In this volume 400 species are dealt with, or, in other words, just half the number which have been ascertained to occur in British Burmah and the State of Karennee. This estimate, it may be observed, is considerably in excess of that set forth in Blyth's 'Catalogue of the Mammals and Birds of Burmah,' published in 1875 (wherein only 660 species of birds are included), and shows the great advance which has been made since that date in the study of Burmese Ornithology. This is due to the labours of such excellent field-naturalists as Mr. Oates and his fellow-workers in the same field, Mr. Davison, Major Lloyd, Major Feilden, and Captain Wardlaw Ramsay. Undoubtedly very much also is due to the co-operation of Mr. Allan Hume, whose Indian journal, 'Stray Feathers,' has been so useful in diffusing knowledge and encouraging the study of Indian Ornithology not only in India, but wherever attention is scientifically bestowed upon this most attractive class of Vertebrates.

We have only to turn to some of the annual volumes of 'Stray Feathers' and 'The Ibis' to see how the above-named naturalists, amongst others, have been gradually paving the way for the preparation of a comprehensive work on the Birds of Burmah; and, in glancing over these volumes, we cannot help noticing the name of one zealous Indian ornithologist, now no

longer amongst us, who would have hailed with delight the appearance of the present work, and who would, moreover, have helped generously (as he was always ready to do) to make it still more perfect. It need scarcely be said that we refer to the late Marquis of Tweeddale, who himself contributed to 'The Ibis,' 'The Annals,' the 'Proceedings' of the Zoological Society, and Blyth's 'Catalogue' much valuable information touching the Ornithology of Burmah.

Until we have before us Mr. Oates' second volume, in which doubtless he will criticise, in his 'Introduction,' the character of of the Burmese avifauna, it would perhaps be premature to discuss this question. We do not, however, forget what Lord Tweeddale has written thereon in 'The Ibis' for October, 1875, and may appropriately quote his last paragraph as follows:—

"The word Burma cannot in any sense be used to express a well-defined zoological province or subprovince. In Blyth's 'List' it is employed for all those regions which formerly constituted the Burmese Empire, three of which within the last fifty years have been ceded to Great Britain, namely, Arracan, Tenasserim, and Pegu. It is bordered by countries possessing ornithological features more or less peculiar; and where the Burmese territory comes in contact with any one of these countries, it is, as might be supposed, more or less peopled by their characteristic forms. But the presence of peculiar Javan forms, unknown in Malacca or Sumatra, if it be a fact, is a marked characteristic, which cannot be accounted for by contact of present boundaries."

Mr. Oates, in his first volume, deals solely with the *Passeres*, commencing with the *Turdidæ*, according to the latest (though not universally approved) fashion. Opening the book at random we find a page (p. 15) devoted to "*Erithacus cæruleculus*, the Arctic Blue-throated Robin." Why "Robin," may we ask? Why not "Bluethroat," as we say "Whitethroat"? Again, why "Arctic"? for Mr. Oates says "this bird has a most extensive range. In summer it is found in Northern Europe and Asia; in the latter continent as far south as the Himalayas. In winter it migrates south, and ranges over the whole of Europe, North Africa, and Southern Asia." As Jerdon identified this bird with *Cyanecula suecica* (Linnæus), it would have been just as well had Mr. Oates pointed out in what respects it differs from that species, or, if not different, why the specific name bestowed by Linnæus has been superseded by that of Pallas.

With Mr. Oates' mode of treatment we have no fault to find. He first gives the name of the species which he supposes to have priority, followed by the synonymy. He then gives descriptions of the male, female, and young, followed by dimensions, and concludes with brief notes on the localities where it has been found in British Burmah, and on its general range so far as ascertained.

Amongst the 400 species of Burmese birds noticed in this volume we find several that are very familiar to us in this country, notably the White- and Grey-headed Wagtails, the Tree Pipit, Common Swallow, *Hirundo rustica*, which resides in Burmah all the year round, and there meets the American Barn Swallow, *H. horreorum*; the Sand Martin, which seems to be well-nigh cosmopolitan in its range, and the Tree Sparrow, which is the Common Sparrow of the Burmese. Amongst other species which occasionally find (or lose) their way westward to England, we notice the Blue Rock Thrush, Bluethroat, Yellow-browed Willow Warbler, Red-throated Pipit, Rose Finch, *Carpodacus erythrinus*, and Little Bunting, *Emberiza pusilla*.

Those who desire to learn something about the range *eastward* of these occasional stragglers to Great Britain should consult the pages of Mr. Oates' 'Handbook,' where, on these and many other points on which we have not space to dilate, they will find much to interest them.

We shall look forward with pleasure to the appearance of the second volume of this work, not only because it will contain an account of species more generally interesting to stay-at-home naturalists and sportsmen, but because in it we shall hope to find much that will be valuable in the shape of generalisations from the data which Mr. Oates has so assiduously collected.

The Fisheries of the Adriatic, and the Fish thereof: a Report of the Austro-Hungarian Sea Fisheries; with a detailed description of the Marine Fauna of the Adriatic Gulf. By G. L. FABER, H. M. Consul, Fiume. 4to, pp. 292, with illustrations. London: Quaritch. 1883.

THE publication of this handsome quarto on the Adriatic Fisheries has been singularly well-timed, since it makes its

appearance at a season when public attention is engrossed with the varied contents of the International Fisheries Exhibition. It is topographical, historical, and descriptive. It furnishes an account of the fishing districts of the Adriatic, the seasons for fishing, and the produce. Then comes a description of the boats used, and of the mode of making, tanning, and mounting the various nets employed, with woodcuts showing the different sorts of meshes. The Fish-markets have a chapter to themselves, while another is devoted to the methods in vogue for curing and cooking fish; the volume concluding with a somewhat lengthy account (extending over 100 pages) of the Fauna of the Adriatic, including special lists of the fishes, both fresh-water and marine, and some useful appendices.

The contents of this work, upon which a good deal of care seems to have been bestowed, may be said to have a two-fold value. They afford an interesting insight into the mode of life, shifts, and expedients of fishermen upon a far-off shore, and by showing us the resources at their command, and their mode of utilising the same, suggest practical hints for the improvement of our own fisheries.

The attention of pisciculturists is particularly directed to the Italian mode of rearing in enclosed waters the fry of mullet, eels, and flat-fishes until they attain a marketable size, and yield a direct and immediate profit. The wisdom of this policy seems so evident that it is surprising that it has not been adopted in this country.

We commend the perusal of this volume especially to members of the newly-formed Piscicultural Society, and to naturalists who would form some acquaintance with the singularly varied fauna of the Adriatic.

The introductory remarks by Dr. Albert Günther, F.R.S., give an additional recommendation to the volume beyond its intrinsic merits; while the excellency of the type and illustrations, with the delicate binding of pale blue and silver, will probably cause many readers to exchange a feeling of curiosity for a feeling of real interest in the subject-matter.

We presume it will find a place amongst the volumes on fish and fishing on view at the International Fisheries Exhibition.

Bibliotheca Piscatoria: a Catalogue of Books on Angling, the Fisheries, and Fish-culture, with Bibliographical Notes, and an Appendix of Citations touching on Angling and Fishing from old English Authors. By T. WESTWOOD and T. SATCHELL. 8vo, pp. 397. London: W. Satchell. 1883.

WE have here another book on Angling, though of a very different character to that just noticed. It is a second edition of a small duodecimo of 82 pages which appeared some twenty years ago, and has long been out of print. The present volume of nearly 400 pages shows what extensive additions have been made to the original work; but, as the authors state in their preface, it is not only the addition of titles that they have aimed at, but extreme accuracy in transcribing those titles.

The volume, they observe, "contains nearly six times the matter of its predecessor. But it is in method not in bulk that we claim to have chiefly advanced. Knowing that the value of a bibliography depends solely on its precision and accuracy, we have endeavoured to set forth the title of every book registered in its literal form, and to furnish those minute particulars touching printers, publishers, pagination, illustrations, &c., which serve to show the successive changes through which the most popular angling books have passed, and enable the collector to prove the completeness of the works in his possession."

The volume is divided into three sections. The first, occupying 270 pages, comprises books which treat purely of angling; the second, extending over about sixty pages, relates only to fisheries; and the third contains books on pisciculture, to which some eighty odd pages are devoted. This is followed by an appendix of quotations from poets and dramatists relating to fishing, and the volume concludes with twenty-four pages of additions and corrections which were noted too late to come into their proper place.

As not only every work, but every edition to which access could be obtained, has been carefully examined by Mr. Satchell, some idea may be formed of the immense labour involved in the preparation of this volume. It will not only interest a large number of those who delight in angling, but forms a most useful work of reference for bibliophiles, who, we imagine, will not be slow to secure copies.

THE ZOOLOGIST.

THIRD SERIES.

VOL. VII.]

JULY, 1883.

[No. 79.]

THE MOA AT HOME.*

EVERYONE who has written anything about New Zealand for the past thirty or forty years, whether about its inhabitants, its archæology, its natural history, or its geology, has had much to tell us about the great wingless birds that once inhabited that group of islands. From this great mass of material we have endeavoured to sift out the leading and most important facts, and present them to our readers in a brief summary.

The Rev. Richard Taylor, F.G.S., thinks he was the first discoverer of the Moa, the name given to all these great fossil birds. While journeying to Poverty Bay, in the early part of 1839, he found the bone of a Moa near the East Cape, which the natives told him was the bone of a large bird which they called Tarepo, and which lived on the top of Hikurangi, the highest mountain on the east coast. He found later that the natives of the west coast called the bones Moa, and were entirely ignorant of the name Tarepo.

It seems probable, however, that to the Rev. W. Colenso, F.G.S., belongs the honour of first discovery of the Moa, as he was the first also to investigate the nature of the fossil remains and determine the struthious affinities of the birds to which the bones belonged. In 1842 he wrote:—"During the summer of 1838 I accompanied the Rev. W. Williams on a visit to the tribes inhabiting the East Cape district. While at Waiapu I heard from the natives of a certain monstrous animal, while some said

* From Ward's 'Natural Science Bulletin' (Rochester, New York), 1883.

it was a bird, and others a person. All agreed that it was called a Moa; that in general appearance it somewhat resembled an immense domestic cock, with the difference, however, of its having a 'face like a man's'; that it lived on air, and that it was attended or guarded by two immense Tuataras, who, Argus-like, kept incessant watch while the Moa slept. Also, that if any one ventured to approach the dwelling of this wonderful creature, he would be invariably trampled on and killed by it." "A mountain named Whakapunaki, at least eighty miles distant in a southerly direction, was spoken of as the residence of this creature; here, however, only one existed, which, it was generally contended, was the sole survivor of the Moa race. Yet they could not assign any possible reason why it should have become all but extinct." "While, however, the existence of the Moa was universally believed (in fact, to dare to doubt of such a being amounted, in the native estimation, to a very high crime), no one person could be found who had ever seen it." "Many of the natives, however, had from time to time seen very large bones, larger, from their account, than those of an ox; these bones they cut up into small pieces for the purpose of fastening to their fish-hooks as a lure, instead of the *Haliotis* shell."

Other Europeans have been told this same myth, and other high mountains have been designated as the dwelling-place of this strange creature. It is hardly necessary to add, however, that subsequent explorations have failed to reveal the hiding-place of "the last Moa," and that we owe our entire knowledge of the bird to the study of its fossil remains. These have been found in many places and under varying conditions.

According to Dr. Haast:—"The oldest beds containing Moa bones are proved to belong to the great glacier period, where they occur in morainic accumulations and silt beds, as well as in fluviatile deposits, formed by rivers having issued from the terminal face of gigantic glaciers during that period. Here they have been traced as low as one hundred feet below the surface. In the loess deposits they are also of frequent occurrence, where their existence has been proved to a depth of more than fifty feet. Advancing to the quaternary period, Moa bones are found in turbary deposits, or in silt or loess on the plains or lower hills, in caves and in fissures of rocks; in fact, everywhere where favourable conditions for their preservation prevailed."

“From the observations we were thus able to make the conclusion has been forced upon us that these gigantic birds must have been able to sustain life over a long period, because the same species which occur in the lower lacustrine and fluviatile deposits are again found in the bogs and swamps, in the fissures of rocks, and in the kitchen middens of the Moa-hunting race, which latter evidently marks the end of the *Dinornis* age.”

Dr. Hector mentions heaps of bones, with stone implements, on the top of Corrio Mountains (South Island), 5000 feet above sea-level.

Mr. B. S. Booth (*Transactions of New Zealand Institute*, 1874) gives a very interesting description of a Moa-swamp at Hamilton. He says:—“The surface lagoon, before being disturbed, was rather higher than the surrounding surface, and consisted of from one to two feet of black peat mixed with a blackish silt, which rested on and was mixed with the bones to the very bottom.” Below the bones there was one foot of a fine whitish, very soft, and somewhat elastic clay. “The bones were deposited principally in the north-east part of the lagoon, in a space exactly the shape of a half-moon, forty feet from point to point, and eighteen feet across the centre, and varying from two to four feet deep.”

He estimates that nearly seven tons of bones were taken out of this space, most of which were badly decomposed, and that the number of individual birds could not have been less than 400. The bones “lay in every imaginable complication of tangle,” with “no bone on top.”

“A great quantity of quartz gravel and smooth pebbles occurred among the bones, and in the shallowest parts of the deposit, under pelves or breast-bones which had not been disturbed, they lay in bunches.” “There was no gravel in the lagoon except amongst the bones, and no small gutter or water-course could be found by which it might have come in.”

The only explanation apparently which can be given for the presence of the pebbles is that they were brought there in the gizzards of the birds. This theory is supported by numerous instances where similar pebbles have been found connected with Moa bones in such a way as to admit of no other explanation than that they were connected with the birds. The bones on the top were in a much better state of preservation than those at the

bottom. There were a large number of bones that had been broken and healed. "A disease of the foot appeared to have been very prevalent amongst them, as a great number of the joints presented unmistakable indications of rot, so much so that some of the toe-joints had even grown together."

There were no bones of young birds near the top, and no fragments of eggs were found anywhere in the deposit, although careful search was made for them.

After stating these and other facts Mr. Booth goes on to discuss the different theories to account for this wonderful accumulation of bones. He shows that they could not have been deposited by running water, neither could the Moas have been surrounded and driven in there in such great numbers by sweeping fires; the birds could not have been bogged, certainly not the later ones, with two or three feet of solid bones under them. And that the bones were not thrown there by savages seems proven by the fact that not a trace of their work could be found, not a hacked or scratched bone, nor an implement or trinket of any kind.

Mr. Booth thinks that a true explanation of the deposit explains the extinction of the Moa, at least in that section, and that that time was much earlier than the date generally accepted, and was caused by the gradual lowering of the temperature until the warmth of the earth and air was not sufficient to hatch the eggs of these birds, from which time they gradually declined, until they finally all disappeared. "When the frost and snow of winter began to set in, though far milder than now, it would have distressed the Moa, as, on account of its great size, it could not find shelter like smaller birds; hence it would select places where it found the most warmth."

The spring-water in the bone-pit, being of the same temperature as the earth, and far above freezing-point (in fact, it may have been a thermal spring), when all round the bird could not put down his foot without being bitten with frost, or without placing it in snow and ice, what would be more natural for them than to step into this comparatively warm water, which to some extent would relieve their suffering from cold in their lower extremities? Thus, the period when frost and snow began to set in, I place as the commencement of the deposit of bones in this pit. The accumulation would have been very gradual, perhaps

for centuries, and the periodical deposits would only have increased at the same rate as the frost and snow. This process continuing, until not even in the most favoured places would their eggs hatch, and the last of their race were, therefore, doomed to annihilation, a period would arrive which must have been with the poor birds a time of indescribable suffering. Thus afflicted with pain, famishing with hunger (as whatever their food was it lay deep under the snow-mantle of the earth), and, finding cruel nature arrayed against them, pinching their bodies with piercing winds, from which they had no shelter, and cutting their feet with ice and frost, were it only as an alleviation of pain when dying, I can see nothing more natural than for them to have plunged into this spring. The water, being of the same temperature as the earth, would feel quite warm to them, and, there being no inducement for them to get out, as their food was cut off, they would settle in deeper and deeper, and remain till numbness and hunger put an end to their suffering.

Hence I account for the bones being soundest on the top, as they would have been deposited so much later. Hence also I account for there being no bones of young birds on top, as it was long after incubation ceased that the old family was gathered to its resting-place. Hence I account for the absence of egg-shells, as these deposits only took place in the winter season, which was never the breeding season with the birds. And by the trampling round of the birds in the spring I account for the equal distribution generally of the gravel amongst the bones, the trampling being the disturbing cause from which alone some bunches of gravel from the gizzards escaped by being covered with a breast-bone or pelvis.

Mr. Booth further adds:—"If it is asked, why are there no bones in the surrounding lagoons? my answer is, that as they are all (as far as I have examined) surface-lagoons, they would have been frozen over when the cold drove the birds into the spring-water, which never froze."

This theory of Mr. Booth's has much to recommend it, and we agree with him that the theory of cold seems more plausible to account for the heaps of bones at Lake Wakatipu, described by Dr. Hector, than the theory of fire which the Doctor advances. The Moas would certainly have been quite as likely to have sought shelter under a precipitous ledge of rocks to protect them

from cold snow-storms as from sweeping fires, and would have been much more likely to have reached such shelter. "Notwithstanding, they perished in clusters. This occurring periodically, perhaps for many years, would naturally account for the many distinct skeleton heaps found by the Doctor in that place."

Many, many pages have been written in relation to the time when the Moa became extinct. That it was contemporary with man, and owes its final extinction to him, is a fact accepted by all, but whether the old Moa hunters were the ancestors of the present New Zealanders, or, if not, whether the ancestors of the Maories hunted the Moa at all, or inhabited the islands before the Moas were all gone, is still a disputed question, with competent observers on each side.

As bearing on the time when the Moa became extinct in that part of the South Island, we quote again from Mr. Booth's paper:—"I find below a certain level that would leave the whole Maniototo Plains under water; there are no Moa bones to be found, with the exception of about the mouths of the burns coming in from the hills, where the bones have been brought down by freshets." "Now what does this fact point to? The only answer I can give is that the Moa was extinct in this locality when the whole Maniototo Plains, from the level spoken of, was yet under water." These statements by Mr. Booth agree well with the position maintained so stoutly by Dr. Haast, previously quoted, who is the strongest and most prominent defender of the theory of the early extinction of the Moa throughout the whole of New Zealand. He claims that it became extinct before the occupation of the islands by the present Maori race, and gives us a great deal of geological data in support of this position. At Moa-bone Point cave he found a stratum "three or four inches in thickness, mostly consisting of refuse matter from human occupation, and of ashes." "It was especially in some localities, as for instance near the entrance of the cave, replete with kitchen middens of the Moa-hunters," among which were found polished and unpolished stone implements, a few small tools made of bone, personal ornaments, fire-sticks, &c. "And now, as it were at once, the Moa-hunters disappeared from the scene," and the cave remained uninhabited for a considerable space of time, as shown by "the clear line of demarcation between that layer and the shell-bed above it, in which no Moa

bones were found," and by the deposit of blown sand between the two, about a foot thick at the entrance of the cave, and gradually thinning out as it advanced towards the interior. Below this line Moa bones and fragments of egg-shells were very abundant, and with them were the bones of seals and a few other animals. Above this line, which doubtless represents a long interval of time, there were no remains of the Moa to be found, and the deposits showed the cave to have been occupied for a long period by a race who lived mostly upon shell-fish, a food which was apparently used very little by the Moa-hunters. Dr. Haast and others give us the details with reference to a number of other localities which tell the same story, *viz.*, that the Moa and Moa-hunters flourished and passed away, and that another race, with different habits, *after a long interval*, occupied the same places; still after all it may have been the same Moa-hunting race returned, after long wanderings, to their former habitat. There being no more Moas to eat, they feasted on shell-fish.

The Reverends W. Colenso and J. W. Stack, gentlemen versed in Maori lore, have reached nearly the same conclusions as Dr. Haast, from entirely different data. According to these gentlemen the old traditions, songs, and poetry of the New Zealanders furnish no evidence that they knew aught of the Dinornis. The word Moa occurs but seldom in their songs and legends, and has various other meanings besides that of a large bird, and it was sometimes used figuratively in allusion to the myth that the Moa lived on air. A love-sick maiden who mourned her lover and would not eat was christened Hinemoa (the young lady who lived on air).

Mr. Colenso has evidently given this whole subject a great deal of time and careful study. In his paper, written in 1842, previously referred to, he says:—"From native tradition we gain nothing to aid us in our inquiries after the probable age in which this animal lived; for, although the New Zealander abounds in traditionary lore, both natural and supernatural, he appears to be totally ignorant of anything concerning the Moa, save the fabulous stories already referred to," and thinks it certain that this would not be the case if such an animal lived within the times of the present race; but in an exhaustive paper, published in the Trans. of the N. Z. Institute three years ago, he sums up his final conclusions thus:—

“1. That the bird Moa (some of those of its genera and species) was really known to the ancient Maori.

“2. That this happened very long ago, in almost pre-historical times; long before the beginning of their genealogical descents of tribes, which, as we know, extended back for more than twenty-five generations.

“3. That this conclusion is the only logical deduction from all that I have been able to gather, whether myth, legend, proverb, song, or the etymological rendering of proper names of places, persons, &c.”

In regard to the numerous accounts published of Maori descriptions of the Moa, he says:—“From January, 1838 (when I first heard of the Moa), down to 1842, and later, no man could possibly do more than I did in my quest after it, and no man could have had better opportunities.” “And I again assert that it was through me that the Maoris generally got to know of the Moa having been a real (or common) bird. I showed them repeatedly, at the station, the plates in ‘Rees’ Cyclopædia,’ containing all the struthious birds, and told them of their habits, &c., and of my opinion of the extinct Moa; that information was carried almost everywhere (with no doubt many additions), and that information, together with simple leading questions on the part of the inquirers (especially when put by the governor of the colony, or any superior,—which, according to Maori etiquette, would not be negatived even if wrong), and also with but a small knowledge of the Maori tongue on the part of the Europeans, fully explains all to me, and that very satisfactorily.”

Mr. Colenso remarks that the condition of things forty years ago, or before the colony was established, was very different from what it is now, and says his inquiries “were carried everywhere throughout the length and breadth of the North Island; they were the constant theme of conversation among the Maoris, who then had little of a novel nature to talk over,—increased from the fact of rewards being offered for bones, feathers (if any), and for information.”

It requires but little knowledge of the workings of the savage mind to see the force of these arguments.

Notwithstanding, many competent observers believe that the Moa became extinct in very recent times, Dr. Hector, Director

of the New Zealand Geological Survey, among the number. Mr. Walter Mantell (son of the eminent geologist) was the first explorer of the artificial Moa beds, soon after the settlement of the colony, and advanced the idea that Moas existed to very recent times. And Mr. Mantell seems very certain that Maoris in the South at the date of his early explorations, in 1846, were well acquainted with the former existence of the Moas and the circumstances which led to their extinction. He also thinks that cannibalism prevailed, but in the North Island only, at the time the Moa was used for food.

Several bones of the Moa, with the dried ligaments still attached, have been found, together with portions of the skin and a few feathers, although Dr. Haast claims that the conditions were exceptionally favourable for their long preservation; others contend that they cannot be very many years old.

Capt. Hutton thought that the weight of evidence goes to show that the remains from the Earnslugh Cave "are not very old, and that probably they do not date further back than the commencement of the present century," but, in speaking of the bones with dried skin from the Knobby Ranges, found more recently (1874) in a crevice among the rocks, he says:—"The extraordinary juxtaposition of decayed and lichen-covered bones with well-preserved skin and flesh seems to me to point to some peculiarity in the atmosphere which enabled flesh to resist decay when shaded from the rays of the sun, and by no means to prove that the bird to which this neck and flesh belonged lived at a later date than those whose bones we now find buried under the soil."

D. W. Murrison thinks that if what Dr. Haast and Mr. Colenso say is true for the North Island, it certainly cannot be made to apply to the South Island, and says:—"I think, from the evidence we are in possession of, there is every reason to suppose that the *Dinornis* has existed within the last hundred years." And thus the discussion is kept up as to the time when the Moa became extinct.

As a sample of the traditions which Mr. Colenso explains away, we quote from Mr. J. W. Hamilton (Trans. N. Z. Institute, 1874):—"In 1844, at Wellington, I was present, as Governor Fitzroy's private secretary, at a conversation held with a very old

Maori, who asserted that he had seen Captain Cook. This Maori, so far as my memory now serves me, I should guess was seventy years old; at all events, he was brought forward as the oldest of his people then residing about Port Nicholson. Being asked had he ever seen a Moa, he replied, 'Yes, he had seen the last one that had been heard of,' and, on being questioned, described it as a very large bird with a neck like that of a horse." Mr. H. further says:—"In 1844, and for many years later, it was believed by our people for a certainty that the Moa was still to be found alive in the South Island, of which very little was then known," and that stories were currently reported of one or two old settlers in the South about Otago and Foveaux Straits who had actually eaten Moa-flesh.

For details of the osteology of these birds we must refer to Prof. Richard Owen's descriptions, published in the 'Transactions of the Zoological Society of London,' begun in November, 1839. Prof. Owen at first made two genera, *Dinornis* and *Palapteryx*, but afterwards discarded the latter genus and referred all the different species to the genus *Dinornis*.

In 1875, Dr. Haast, Director of the Canterbury Museum, proposed two families, with two genera in each family, thus:—Family *Dinornithidæ*, (a) genus *Dinornis*, (b) genus *Meinornis*; and family *Palapterygidæ*, (a) genus *Palapteryx*, (b) genus *Euryapteryx*.

Under these four genera, as proposed by Dr. Haast, there have been about twenty species described. These species are founded mainly on the size and proportion of the bones, particularly the bones of the leg; and it is not improbable that as more careful comparisons are made of larger series of bones, the number of species will be reduced. It is an interesting fact that Cook's Straits, which separates the two islands, "seems to have been an effectual bar to any migration from one island to the other," as the same species are not found on both islands. Prof. Owen infers from the beak of the *Dinornis*, "formed after the model of the adze or pickaxe," and "the robust proportions of the cervical vertebræ, especially of their spinous processes," that it had "a more laborious task than the mere plucking of seeds, fruit, or herbage," and that "the beak was associated with the feet in the labour of dislodging the farinaceous roots of the ferns that grow in characteristic abundance in New Zealand."

Portions of dried skin and a few feathers of the Moa, as already stated, have been found; the colour of the barbs of the feathers are chestnut-red, and the rounded portion of the tip is white. These feathers, according to Captain Hutton, show the bird to have been more nearly allied to the American Rhea and Emu than to any of the struthious birds of the Old World.

Fragments of Moa eggs are quite numerous, particularly in the kitchen-middens of the Moa-hunters, and a few nearly or quite perfect specimens have been found. Dr. Hector describes one 8.9×6.1 inches diameter, which contained the remains of an embryonic chick. Another specimen measured 9.5 inches long.

These are certainly monstrous eggs, and yet the fossil bird of Madagascar (*Epyornis*), although a smaller bird than the great *Dinornis*, laid a much larger egg, two specimens of which are in the Jardin des Plantes, Paris, and measure respectively 13×9 and 12×10 inches in diameter. And yet, after all, neither of these birds laid so large an egg, in comparison to its size, as does the Apteryx of New Zealand at the present day.

And now, as a fitting close to this brief summary, we quote from Prof. Owen's paper on the *Dinornis*:—"The extraordinary number of wingless birds, and the vast stature of some of the species peculiar to New Zealand, and which have finally become extinct in that small tract of dry land, suggest it to be the remnant of a larger tract or continent over which this singular struthious fauna formerly ranged. One might almost be disposed to regard New Zealand as one end of a mighty wave of the unstable and ever-shifting crust of the earth, of which the opposite end, after having been long submerged, has again risen with its accumulated deposits in North America, showing us in the Connecticut sandstones of the Permian (Trias) period the footprints of the gigantic birds which trod its surface before it sank; and to surmise that the intermediate body of the land-wave, along which the *Dinornis* may have travelled to New Zealand, has progressively subsided, and now lies beneath the Pacific Ocean."

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from p. 251.)

BEFORE turning the snakes into any sort of cage, a minute examination of the interior should be made, to see that no defects exist. The strength of all joints and fastenings should be tested, as well as the firmness of the tree, and special care must be taken that no points of nails or sharp edges of glass project, and that the heating apparatus, if any, is sufficiently guarded from contact; frequent trials of its efficiency and freedom from leakage are a requisite precautionary measure also. We have already laid stress upon the desirable roughness of the branch, and the importance of leaving no apertures or narrow spaces wherein the snakes may do themselves an injury; to this may be added the advice that everything within the cage should be practically immovable. It is wonderful what heavy bodies they manage to capsize and push about, and if any possibility of doing this be open to them they may hurt themselves, break the object, or damage the sides or glass by its fall. No decorative carving, and still less paint or varnish, is admissible inside. If the cage is to be painted on its exterior it would perhaps be as well to remove them until the smell has gone off, though, as far as I have seen, this has little or no effect upon them. They will not eat a putrid carcass, but they shew no repugnance to its effluvia, and will even seek shelter beneath it, or curl up composedly on the rotting body of a deceased comrade. An irritant vapour, such as ammonia, will disturb them by its effect on their mucous membranes, as it would any other creature; but I used to keep snakes in small cabins on board ship, as well as in very limited apartments on shore, which were wont at times to be very foggy with tobacco-smoke, years before I heard of their alleged antipathy to nicotine, without any visible prejudice to their well-being. I never use soap, soda, carbolic acid, or anything but hot water and a brush or cloth, however, in cleansing any portion of the cage or its arrangements.

For the doors, or any other part capable of being opened, a very safe and simple fastening will be found in a bent staple, so fixed as to project through an aperture in the frame of the door

when shut, and then secured with an ordinary steel split-ring, such as is used for a bunch of keys. After some experience, I can strongly recommend this method in preference to any other, for the cages of *all* animals. Locks get foul and out of order, and keys are mislaid; bolts, buttons, catches and pins slacken after a time, and are liable to be displaced by accident; moreover, their closure is apt to be neglected "just for a moment," as confidence begets a certain amount of indifference to security—one day it is forgotten altogether, because nothing unusual in the appearance strikes the eye—and the next thing is the discovery of a snake in somebody's bedroom. A split-ring, on the contrary, must be honestly and obviously either on or off, and cannot possibly be shaken asunder or dislodged by any means short of the deliberate process of unthreading it from the loop on which it hangs. The staple must not project far enough to allow the door to be loose. For their own sakes, quite as much as for the peace of mind of all whom they may concern, snakes cannot be too rigorously guarded. All doors should lie wholly upon the outside of the cage when closed, and their lower margin ought never to be above the level of the actual floor, so that the latter may be thoroughly swept out at times.

It is well in many cases to have a sliding partition adapted to the cage, by which it can be divided into two separate compartments at pleasure, for convenience in feeding, cleaning, the isolation of a specimen, and many other reasons. Its mechanism must be left to the judgment of the reader, as may be most suitable to the construction of his particular vivarium and the purpose for which the division is thought necessary. All that need be said about it is that its future requirements must not be forgotten in allotting the length and slope of the tree, and that the slit through which it is to be introduced must be not only securely covered but filled up when it is not in use. Snakes which cannot be removed with the hands may be allowed to crawl into a box or bag placed within the cage; if a bag be used, its mouth should be distended with a big stone, or something equally heavy and bulky, to admit of their finding the aperture, and at the same time prevent their passing beneath it. This can be pulled out and the bag tied when they have entered; on no account let it fall within. There will be no difficulty in inducing them to go into a box or anything else that is penetrable, as soon as they

perceive it; they are as inquisitive and fond of novelties as monkeys.

The changes which go on in a reptile's economy are so slow and involve so low a degree of oxygenation, that it demands very little "fresh air." Such dimensions for the snakes' abode as we have given are called for to permit of their taking adequate exercise, not by respiratory necessities. People often exclaim, "Why, they won't be able to breathe!" when they see a cage closely covered in cold weather, not heeding that the inmates have relatively quite as much air as we enjoy in a room with the door and window shut and the chimney stopped up, and certainly ignorant of the fact that the amount of oxygen in the cage would be sufficient for its inhabitants for perhaps a couple of years without renewal: witness the length of time they will exist in a stoppered bottle. Abundant ventilation, then, is a matter to be desired rather for the comfort of the owner, in insuring a pure atmosphere within the cage whenever he opens it, than to be looked upon as an essential for the health of the serpents themselves. When it can be obtained without sacrifice of warmth, it should, of course, be so ordered; but it is better to check or altogether dispense with a current of air if it entails cold. Every opportunity of airing the interior when the snakes are absent should be seized, and after it has been scrubbed they ought not to be replaced until every part of it is dry, nor should the gravel be spread over a wet floor. The utmost cleanliness must be observed, soiled portions of the gravel removed daily, and the water never allowed to grow foul, otherwise the cage becomes offensive and the snakes very unpleasant to handle. Drainage must be attended to also. The tray of earth and charcoal in the small heated cage is a great deodorizer; where this is not employed, a fine wire basket, filled with coarse pieces of charcoal, placed in some convenient situation, will absorb any bad odour. Some serpents are much more pronounced than others in this respect. The Common Grass-snake has already been noticed, and it is curious that many species closely allied to it have the same peculiarity, the Indian River-snake (*Tropidonotus quincunciatus*) for instance. Most species, when only recently taken and alarmed, have a disagreeable smell, but they soon lose this as they become accustomed to their position. The Rattlesnake has a fœtor, under some circumstances, which is

quite characteristic of its presence. Overcrowding and injudicious feeding are sure to give rise to impurity. Serpents which live on frogs and fish are worse, as a rule, than those which prefer birds and small animals, while those that eat lizards are generally destitute of offence.

Fine smooth gravel is the best material for covering the floor, just so large that it shall be too heavy to adhere to the finger (or snakes' bodies) when wetted. Sand sticks to them as they come out of their bath; earth is converted into mud and smudged over the glass, woodwork, or, worse still, the canvas; moss hides them altogether, gets pushed about in unsightly heaps, and is carried into the water to rot; turf combines all these disadvantages with the additional one of allowing the snakes to burrow below it; while bare boards or pavement always look dabbled, stained and dirty. Blankets or rugs should only be put in when it is desired to cover the reptiles, not for them to lie upon, as they will invariably get underneath. The depth of gravel must depend upon the size of the serpents; they will all plough it up with their heads, and the layer ought to be thick enough to prevent the floor from being exposed by their so doing. Snakes, again, which are about to deposit eggs, seem always to have an instinct of burying them, and will sometimes refuse to lay them if they cannot first excavate a hollow of some sort for the purpose. Many valuable specimens which have died in captivity and whose condition has not been recognised until after death, are supposed to have been killed by the retention of their ova, in consequence of their not finding a fit place for deposition. A magnificent West African Python, which suddenly expired in the midst of health at the Clifton Gardens in 1857, and whose body was examined by Mr. Flower, articulator to the Royal College of Surgeons, Mr. Frank Buckland and others, may be quoted as an example. A proper depth of gravel will therefore tend to obviate such a calamity, though, if the state of affairs be perceived, the parturient snake had better be isolated and special treatment pursued. A double quantity of gravel should be provided, so that half may be thoroughly washed and dried while the rest is in the cage; in this way the layer may be changed frequently without inconvenience. Damp or dusty gravel ought never to be put in. The stones must not come into contact with glass or canvas, which should be protected by a ledge in such a

manner that the lowest exposed margin is a little above the surface of the layer. Allusion has been made to the evil of getting the gravel wedged between the frame and canvas in the cold cage ; with glass it is almost as bad, since this gets scratched by the pebbles which the snakes squeeze against it as they pass along, and becomes friable in consequence. A good deep ledge should guard the doorway too, and prevent the stones from tumbling out or blocking its return when it is opened ; this, however, must be movable, to allow the whole to be cleared out without embarrassment when necessary.

Slowworms are often associated with Common Snakes in an unheated cage, and very pretty little creatures they are, though presenting no points of any especial interest. These ought to have earth or moss in addition, and will not live comfortably upon the gravel, though they have no objection to taking frequent promenades over it. Their requirements may be combined with those of the legitimate occupants, by erecting a little mound of turf in the middle of the cage—upon the floor, not on the gravel—and placing over it a fern-glass, around the lower border of which are pierced a number of smooth round holes, large enough for the slowworms to pass through, but not admitting the snakes. If the dome be not itself sufficiently weighty to prevent the serpents from overturning it, it must be fixed in some way ; the turf-heap may be made ornamental with a fern or other plant, and if plenty of worms and maggots be put in, the slowworms will feed themselves there at night. A large flower-pot inverted, with the hole at the top blocked up and smaller ones drilled around its base, will answer the same purpose, if the edges of the apertures be filed perfectly smooth, but has not such a pleasing effect and will require extra weight.

When blankets and rugs are spoken of, coarse horse-cloth may be understood. It is well to avoid the application of such coverings to the snakes bodily, if they can be kept warm with free circulation of air about them ; but when it is called for, we must not forget that blankets do not by themselves make a reptile any hotter. If we clothe ourselves with non-conductive material, our heat increases, because the caloric generated by oxidation, as the vital processes go on, accumulates. A snake's temperature depends entirely on that which it receives from its surroundings, except in one or two rare instances, and then only to an extent

which is scarcely appreciable; it possesses no such intrinsic heating apparatus as we have. Blankets, therefore, only keep in whatever heat exists before they are put on; wrap up a warm snake and it will retain its warmth accordingly, but a cold one will become no hotter, though it may be thus defended from an approaching decrease of atmospheric temperature. Where artificial heat emanates from the flooring of a cage, to cover the snakes as they lie upon it will naturally insure their getting the full benefit of the warmth by restraining its diffusion. It is generally better to introduce a box, partially filled with moss (never wool or flannel), and having the lid so fixed as only to leave a small opening at night; and it is amusing to see how quickly they get to know this box, and come swarming over one's hands as soon as the door is opened, in their eagerness to get in—not that they necessarily intend to remain there, by any means! They should be turned out in the morning.

A little *contretemps* sometimes occurs in covering up a snake with a blanket, which must be laughable enough to a disinterested spectator, though vexatious to one who finds that his care and trouble have been expended in vain. You spread the cloth over the reptile as it lies quiescent; but while you are leaning across it, making everything neat and smooth and comfortable, the object of your attention, aroused thereby, is slipping out of the cage underneath your elbow unperceived, and you close the door, satisfied that all is snug for the night, to stumble on the creature as it glides away to a distant corner of the room—just as the clown, who has been concealed at the bottom of a cupboard, dives between the legs of the policeman who is searching the upper shelf! I was once bringing home a very savage Anaconda, about nine feet long, in a deal box which had been converted into a temporary cage by nailing some wire netting over the top; at one end a piece of this netting could be lifted, trapwise, to form a door. I was endeavouring to cover him up one evening, as he lay at the farther end of the box; protecting my hands with the rug, I passed it smoothly in to the full extent of my arms, which brought my chest almost into contact with the opening, and proceeded to push and fold it over him as well as I could at that distance. Suddenly there came a furious hiss, almost in my ear, and I found the enraged reptile's head on my shoulder, close to my face! As I laboriously covered the after part of him, the other

end had been gliding towards me, and had passed out of the box in the space between my breast and the wire; I seized him, however, before he struck, and speedily replaced him.

Cages which contain no fixed tank should be supplied with a water-vessel of a size proportionate to that of the snakes, according to the rules already given (pp. 18—24). This vessel ought to rest upon the floor, not on the gravel, for the reptiles will never cease in their efforts to burrow underneath it if it lies on the surface, and in the end will most likely capsize it. The gravel must be cleared entirely from the space which it is to occupy, for the tiniest pebble underneath will render the pan unsteady and liable to breakage; when it is in position the gravel must close up again around its sides. But since the water has to be changed and the pan washed every day, this process of sweeping back the gravel every time would be one of no small tediousness and difficulty with the serpents moving about; and I find it convenient to use two receptacles, one fitting as accurately as possible within the other—two of precisely the same size and shape will do, provided they are broader at the top than at any other part and are not too thick. The inner one can be removed at any time and returned without trouble, the cavity of the outer being dried with a sponge *in situ*, if need be. Where it can be arranged, glass vessels should always be used, that the snakes may see the water and their mode of swimming and drinking be observed; two gold-fish globes of suitable size, cut at the level of their greatest diameter, are often appropriate, but care is demanded that the bath be not deep enough to prevent the smallest bather from getting out of it again when afloat; for the amount of water must be so regulated that no overflow shall take place, even if all the snakes are submerged, and will therefore commonly be far below the brim. Do not place the vessel underneath the tree, if it can be put anywhere else; see that the edges are not chipped; and never attempt to keep frogs, newts or fish in it, whether intended for food or not. If it be made of opaque materials the gravel should be heaped up around it, or a wooden surrounding contrived so as to reverse the natural overhanging slope of the sides, otherwise little specimens will not find the water readily, and are prone, moreover, to hide underneath the margin. Soft water is to be preferred to hard, when it can be obtained; unfiltered stream or clear pond water would probably

be best. This is a matter which is still open to much investigation, as there is little doubt that errors in this respect often give rise to canker. It ought always to be of the same temperature as the cage when introduced. As cold weather approaches, little or no water should be allowed to snakes which are kept without artificial warmth with a view to hybernation; if given during the day it had better be taken out at night, lest wandering into it, they get numbed and lie there, and so die. On board ship in rough seas, I have sometimes hung up the water-globe, to obviate the unpleasant results which ensue from spilling its contents; but the plan is not to be commended under ordinary circumstances, for—independently of the evident perils of such a position—the oscillation causes a sensation akin to sea-sickness in serpents. They abominate such motion as is produced by agitation of the surface of water; a snake attempting to swim amidst *waves* is powerless.

All should be supplied with water, but different species exhibit very different degrees of inclination for it. The Anaconda's predilection for the bath has been remarked, and most of the great constrictors are equally fond of it. Many Colubers, too, live nearly as much in that element as on *terra firma*, particularly those which belong to the *Natricidæ*, a family including three of the genera before-mentioned—*Tropidonotus*, *Heterodon*, and *Ischnognathus*; their nostrils are placed on the upper part of the nose. On the other hand, some, like the Common Viper and Smooth Snake, rarely drink or bathe, the Rattlesnake perhaps never. At any rate, I can say with confidence that specimens kept by me for several years have never been observed to make use of the water to which they can gain access at any time; *certainly* they have not done so during the year or more since my suspicion of the fact was aroused, or a little hygrometric apparatus would have recorded it, though they have fed well. The only one I ever knew seek the bath had undergone severe injury, and died shortly afterwards.

NOTES AND QUERIES.

The 'Ibis' list of British Birds.—We are glad to be able to announce the publication of this important list of British Birds, which has been for some time in preparation by a Committee of the British Ornithologist's Union. Since its appointment in May, 1878, this Committee has held *seventy-one* meetings, and no pains seem to have been spared to settle authoritatively the list of species which have claims to be regarded as British, as well as to decide the specific names which should be employed for each. It is to be hoped that with a view to secure uniformity in nomenclature our readers will henceforth admit the authority of this list, and adopt the nomenclature recommended in it in all future communications to this journal. The list, which extends to over 200 pages, with an excellent index, has been admirably printed by Messrs. Taylor & Francis, and may be obtained of Mr. Van Voorst, Paternoster Row.

Animal Parasites.—At page 219 I observe an extract from 'Nature' on animal parasites. The two names tick (*Ixodes*) and "ked" (*Melophagus*) are frequently used as synonyms, but only in districts where there are no ticks on the sheep. Where both are found the shepherds can, and do, easily distinguish them. The tick has eight legs, the ked six, and the latter never attaches itself to the sheep, but moves freely about amongst the wool; while the former (the female only), after inserting the barbed proboscis, never quits its hold until the abdomen is fully distended with blood and eggs, when it drops off either dead or dying. There is less chance still of confounding the sheep-louse (*Pediculus*) with the tick. It is a true louse, apparently both rare and local. I have only seen it a few times, but then in great abundance, and always on sheep that had been in low condition, and after they had begun to "mend." The extract concludes thus:—"But I can remember no instance of an *Ixodes* found on a sheep, though I would not undertake to say they never occur on that animal." There are large tracts in the pastoral districts of the South of Scotland—in Roxburgh, Selkirk, Peebles, and Dumfriesshire—where ticks are too common on a sheep; also parts of Galloway, Ayrshire, Lanark, and Argyle. In these districts three species of *Ixodes* occur on sheep, viz.—*I. marginatus*, *I. erinaceus*, and another that I have failed to identify. Can any reader of 'The Zoologist' inform me if there is any work on the British ticks? as I have hitherto failed in obtaining such. Enclosed are two reports, which will show the importance of the subject.—ANDREW BROTHERSTON (Shedden Park Road, Kelso, N.B.).

[The reports forwarded are extremely interesting, but of too great length to be quoted here. One is a report by a Committee of the Highland

and Agricultural Society, and by Principal Williams, F.R.C.V.S.; the other, a report of the Louping-Ill Committee of the Teviotdale Farmer's Club. The term "louping-ill" is said to be derived from *hloupa*, an old Scandinavian word for a staggering gait. The disease (a trembling paralysis) is one which every year entails enormous loss amongst hill sheep, both black- and white-faced, particularly in Scotland. It appears to prevail more in the Silurian hill districts of Scotland, and extends from the Hebrides to the southern extremity of Dumfriesshire, being equally prevalent in the district of Langholm and in the Isle of Skye. The cause of the disease is ascribed to a variety of external circumstances,—as soil, pasture, weather, and the influence of ticks. The popular belief in the influence of the tick, or its close connection with the disease, being very general, it was necessary to consider this point very carefully with the view of determining whether any relationship really existed between the parasite and the disease. The result of observations on this point was confirmatory of the popular idea, for it was found (1) that where louping-ill existed the tick was sure to be; (2) that where the parasites were absent there was no louping-ill; (3) that the appearance of the parasites on the sheep in early summer was concomitant with the annual outbreak of the disease. Ticks are occasionally found on land free from louping-ill. From this it is concluded that these parasites are the conveyers or inoculators of a poison existing in the herbage or soil; for by improvement of the land by ploughing and liming, by artificially feeding the sheep, and destroying old grasses, the natural cover of the ticks, "louping-ill" has been entirely eradicated. The tick is a true blood-sucking parasite, belonging to the family *Ixodidæ*, provided with a serrated rostrum or beak, which enables it to pierce the skin, and retain its hold very firmly. It is generally to be found where old grasses are abundant, which afford it cover during the season at which it is not obtaining blood from the sheep. On first leaving the ground to attack an animal it is very small, often no larger than a pin's-head, and the congregation of numbers makes the part affected appear quite black. When once fixed they will hang for days together sucking the blood, until their bodies become distended to eight or ten times their original size; nor do they quit their hold until they die, the eggs remaining dormant until the following spring, when new broods are hatched to commence the attack as before. Mr. Brotherston has done good service by publishing the results of his investigations on this subject; and the remedies suggested in his report deserve the careful attention of sheep farmers throughout the country.—ED.]

M A M M A L I A.

Voracity of the Shrew.—One day last summer I caught two Common Shrews. I placed them in a tin box, and supplied them with plenty of

insects and ants' eggs. On reaching home an hour afterwards I found that one shrew had torn out and devoured the intestines of the other. On placing the survivor in a case with vipers and snakes, he at once attacked them, biting furiously at anyone in his way. The vipers hissed, but did not strike him; and the snakes tried to avoid him. I was at length compelled to remove the shrew for the safety of the reptiles. Is it not probable that snakes and vipers have a destructive enemy in the mole, for when in their winter sleep they are completely at his mercy. In winter he seeks large heaps of stones, and such places as those in which reptiles hibernate, and he will attack any small animal.—C. WITCHELL (Stroud).

Natterer's Bat in Co. Cork.—On the 7th of April last, while walking through the woods of Castlefreke, Co. Cork, the seat of Lord Carberry, my attention was attracted by seeing a bat flying about in the sunshine at 2 o'clock in the afternoon. At first I thought it had probably been disturbed accidentally from its resting-place, and was straying about lost in the sunlight; but presently I saw that it was catching insects; and after a little it alighted on the trunk of a tree, and I was enabled to watch its proceedings. It was munching a large moth, and pushed the insect into its mouth with its thumbs, and I could hear the crackling of the moth's armour as it disappeared. I saw that it was a Long-eared Bat (*P. auritus*). I put my hat over it, but it managed to creep out underneath and escape. About an hour later I observed another bat in a different part of the wood, which, like the former, stayed in the open sunshine, and seemed to prefer it to the shade of the trees. I noticed that this bat was more lively in his movements than the one previously observed. I followed it for a long time before it pitched, and then it was too high in a tree, hanging by one foot. However I soon dislodged it by throwing at it, and it again alighted, this time low down on the trunk of a tree. After one attempt and failure, I eventually secured it. On referring to 'Bell's Quadrupeds' I had no doubt of the species being *V. nattereri*, the tragus being three-fourths the length of the ear and sharp at the tip, and the absence of any notch on the outer margin of the ear; the cilia on the inter-femoral membrane were well marked; the colour was brownish grey above and light coloured beneath. Mr. A. G. More has since confirmed this identification, and the specimen is at present in the Royal Dublin Society's museum.—J. FFOLLIOTT DARLING (Clonakilty).

[Bell calls this the "Reddish Grey Bat," a name which does not sufficiently distinguish it from other species. "Natterer's Bat" is a better English name for it. We have notes of its occurrence in Dublin, Kildare, and Wicklow, and in very many counties of England, chiefly midland and southern; and on turning over our journals we find the following entry relating to it:—"August 24th, 3 p.m., at Midhurst, Sussex, saw Natterer's

Bat flying round an almost leafless oak near the river." We have several times met with it near London, in localities to the north and north-west.—ED.]

Pine Marten in Northumberland.—A fine specimen of the Pine Marten, *Martes abietum*, was captured alive on May 23rd, in the grounds of Mr. J. Hedley, near Chirton, in this county, and is now in my possession. At first it was very fierce and untractable, burying itself in the hay of its bed, and refusing to feed if looked at. It is now becoming more reconciled to captivity, and I trust that by kind treatment I shall be able at least partially to subdue its ferocity. The soft close fur of the head, neck, body, and tail is of a rich chocolate-brown; the ears, which are rounded and about an inch in length, of a light brown; the chin, throat, and breast are yellowish white, with a few scattered brown spots. Martens are now extremely rare in the North of England, but a few still linger in the wilder parts of Cumberland and Northumberland. — WM. YELLOWLY (South Shields).

BIRDS.

Marsh Warbler at Taunton.—Through the kindness of Mr. John Marshall, of Belmont, Taunton, I have just been able to add a clutch of Marsh Warbler's eggs to my cabinet. The nest was taken near Taunton on June 7th, and, like all previous nests obtained, was attached to stems of meadow-sweet. It contained four very prettily marked eggs.—MURRAY A. MATHEW (Stonehall, Wolfscastle, Pembrokeshire).

The Ring Ouzel in Captivity.—Mr. J. F. Darling's remarks (p. 239) remind me of a special favourite of my own, which reached me in January, 1881, in a cigar-box. Although it was 6 p.m. she took a bath at once by the light of my reading-lamp. Subsequently she became much attached to me, and, as I gave her the run of my rooms pretty often, she became thoroughly at home on my shoulder, and would peck the pen with which I might be writing. She delighted to tear my blotting-paper into shreds; but a great amusement was to lift pens, pencils and sealing-wax in turn out of the tray in which they generally rested; dropping them on to the floor she would hop away, to turn round with a look of surprise at the empty tray. Any interference she received with mock ferocity, depressing the head to attack my fingers, erecting also the feathers of the occiput and back in manifest glee. Like Mr. Darling's birds, mine enjoyed black beetles and bread and milk; but she was partial to shredded meat, and wild berries pleased her in the fall. Mr. Darling's remarks on the notes of the Ring Ouzel, and the attitude in which a caged example sits, are so precise that I need not add to them; but I may say that my bird began to sing at 7 a.m., and sang from February to July. Latterly absence from home led

me to billet "Toby" on the cook, in whose care she flourished, and developed conservative principles. So averse was she to innovations, that when her cage was changed, she refused food for twenty-four hours; and if her zinc bath was placed in the right corner of her cage instead of the left, she indignantly cast in her lot with the "great unwashed" until the offence had been removed. After keeping her sixteen months I sent her to console a forlorn male Ring Ouzel in the Western Aviary, whose wild rich notes had won my heart. Though the Ring Ouzel is one of the rarest Norwegian thrushes, I long watched a fine old male near a station in the Romsdal in 1878. During the severe winter of 1880-81 a single Ring Ouzel made his appearance on the garden-lawn of a house at Charlton, where my friend Mr. W. F. D. Curtoys was visiting, and shared the sparrows' crumbs; two others lingered in the neighbourhood, but were too shy to approach the house. I know of another example shot in Devon in the winter following. My correspondent Mr. Ebdell observed a newly-arrived male Ring Ouzel at Ripon on March 4th, 1883, apparently much exhausted by a long flight.—HUGH MACPHERSON (Carlisle).

Swallow and Wren nesting in proximity.—In a corner of an arbour in the grounds of Duff House, belonging to the Earl of Fife, and about a mile from Banff, there is now (June 13th) a Wren's nest and a Swallow's nest in such close proximity as to be actually attached to each other. The one, a round ball of moss, has an opening, just above the edge of its neighbour, about as large as would admit an ordinary thumb. The other, cup-shaped and open at the top, is composed externally of mud, but internally is well lined with feathers. The Swallow's nest, at the date mentioned, contained eggs; but of the contents of the Wren's nest I can say nothing. Wishing that both birds might succeed in their work of incubation, and knowing the extreme susceptibility of the Wren in regard to interference with its nest, I refrained from inserting my fingers. I do not remember to have ever seen two objects placed naturally together, and presenting such a remarkable contrast as these nests; certainly not in bird architecture. The curiosity must be seen to be rightly appreciated, as most if not all things in Nature must be.—THOMAS EDWARD (Banff).

The Hooded Crow in Ireland.—Mr. H. Chichester Hart's remark (p. 225), that the Hooded Crow is rarely seen near Dublin, suggests to me that the notes of another observer may be of interest. During the past six or eight years I have frequently seen Hooded Crows, generally singly, and never more than two together, feeding on the shore in the neighbourhoods of Malahide, Clontarf, and Ballybrack. It is a species which, although not plentiful, is by no means uncommon on those parts of the coast that it does frequent. At the end of March, 1878, I found a pair breeding in a small clump of trees at Finnstown, near Lucan, Co. Dublin. The nest was

placed in the fork of a Scotch pine, and was well sheltered by the foliage. It was composed of sticks and twigs, and lined with moss and sheep's-wool, and contained six eggs. Last year I noticed a pair nesting in a somewhat similar position near Celbridge, Co. Kildare. When in the Island of Achill with my friend James W. Bauks, in the autumn of 1879, we noticed a peculiarity of colour, or rather shade, in the Hooded Crows there. The grey parts were of a lighter shade and a bluer tinge than in any of these birds I have seen elsewhere. It was particularly so on the nape and upper part of the back. The only part of Achill where we saw Hooded Crows was in the neighbourhood of Keem Bay, and the adjacent village of Keele. The birds of this species which I have seen in Co. Antrim, on the Co. Clare coast, and in the Aran Isles (usually mis-spelt Arran), show nothing of this peculiarity. So far as I have observed they are not much more numerous on the west coast than on the Co. Dublin shore.—J. E. PALMER (Lyons Mills, Straffan, Co. Kildare).

The Sparrow and his Ways.—I have all my life been a friend to the House Sparrow, and have defended him against many charges brought against him. Last year, however, I saw an abstract of a paper read at the Essex Natural History Society by Major Russell, in which this bird was denounced most emphatically. Major Russell contended that the Common Sparrow was causing the extinction of the House Martin, and gave some weighty evidence in proof thereof. I have been in consequence induced to pay particular attention during the summer to this bird, and I am able to endorse all, if not more than Major Russell stated against it; for the Sparrow not only steals away the nest, but ruthlessly destroys that of every bird which happens to be weaker and has a softer bill. Our summer migrants no sooner select sites for their nests than they are attacked and driven away, and the aggressor may be seen strutting across the lawn as though he had done a good deed, dauntily proclaiming himself "cock of the walk." The side of my house is covered with creepers, in which numerous Sparrows had built their nests, most of which were formed from the commenced nests of other birds. Now, as I preferred the migrants, and Chaffinches, Water Wagtails, Greenfinches, Goldfinches, and Grey Linnets, I ordered the Sparrows to be destroyed and three-brick-traps to be set, in which fifty of these pirates were taken. Most of them, however, were hens and young birds, the old cocks being too crafty for a brick-trap. I shall continue the same plan this year, and hope to make some impression upon this horde of robbers. I make no direct charge against the Sparrow on the score of food, though he persistently robs the chickens, keeping all other birds at a distance; but I suspect that, when I continue my observations during the present summer, I shall find he is more granivorous than insectivorous, and I shall have to denounce him as an enemy to the agricultural interests.—C. R. BREE (Colchester).

British Redpolls.—I have read with much interest the suggestion of Mr. J. H. Gurney, junr., that the large and pale-coloured Lesser Redpolls, which are often to be met with, are hybrids between the two species. I have examined a great many living examples in East London and elsewhere, and I incline to think that two races of Lesser Redpoll can be distinguished. Of course there are "dwarfs" also, which are clearly late or weak birds. But though the larger race, which I have often seen in Oxfordshire, is frequently confused with the Mealy Redpoll by dealers, I am inclined to think that it is both too numerous and too constantly identical in notes and song with the smaller and tawnier bird to have any blood of the Mealy Redpoll, which latter differs so decidedly in notes and in individual traits from the common bird. To my mind it is quite as natural that there should be two races of Lesser Redpoll as two races of the Dunlin or Wheatear, which I believe to be the case. But though I have kept a large number of Redpolls and examined many more, I make these remarks with all deference.—H. A. MACPHERSON (Carlisle).

Choughs in the Co. Waterford.—On the 22nd May inst., I took the Chough's nest mentioned (p. 252) as having been re-lined ready for eggs on the 9th. We found the female hatching, but on being disturbed she remained uttering her cry from the rock above. These Choughs must have been singularly unsuspecting to use the nest which we had visited on three previous occasions, splicing ladders together to reach it each time. It was built of stems of heather, the smaller branches of furze, with some stalks of bracken and woodbine; inside this was mixed a little grass with a thick lining of cow's-hair and wool, the cavity being rather broad and open; it contained three eggs, one only of which showed slight evidences of incubation. Further round the coast I saw a pair of Choughs fly into the crevice whence their eggs had been taken on the 9th. Taking a further survey from a boat of a spot where Choughs were said to breed every year, another pair of these birds came dropping down after their manner with closed wings, and regardless of our presence flew to their nest before our eyes; it was, as usual, in a hole over a cave of considerable height. I then landed, and on descending to their nest by a rope I found three young birds, from a week to a fortnight old, indistinguishable from young Jackdaws of the same age, several broods of which I had seen the same day (May 22nd). I did not molest this nest. Thus out of five nests examined two contained two eggs each, one three eggs, one three young, and one five eggs. A man who took five Choughs'-nests in the same locality about five years ago told me that these contained two and three eggs each, not more. In another place, on being lowered to a fissure in the top of which was said to be a Chough's-nest, I could just see the bottom of a nest from below; the only entrance being through a small hole in the top of the fissure, and the position quite impregnable. — R. J. USSHER (Cappagh, Co. Waterford).

Song of the Grasshopper Warbler.—Walking along the sunny side of Bruerne Wood, near Chipping Norton, on April 30th, I came to a spot where some trees had been cut down, and where the young saplings growing out of the long grass were only two or three feet high. Here I caught the unmistakable “reel” of the Grasshopper Warbler, the ventriloquism of which was very obvious; but the bird uses a *crescendo* in the middle of a long spell at it, which betrays his position. Thinking that I might possibly get a sight of it, I crossed the low hedge, and got in among the grass and saplings up to the point where I had heard it. I made a great crackling and noise in the dry grass, which was not to be helped; but nevertheless I very soon saw the bird about ten yards away, perched on a twig. The feature which most attracted my attention was the long and very flexible olive throat, which was moved about a great deal, thrust forward, and again drawn back so as to fold like a double chin. I have no doubt that the ventriloquistic power is connected with this long neck; but when the bird again begun to “reel” he turned his tail towards me, so that I could not so well see the throat at work. So far as I could see, however, there was no very marked vibration of any part of the body in making the noise, to which I then listened for some minutes, but failed to hear a longer effort than forty seconds by my watch—though the bird was quite at ease, I think. At this point my little terrier came worrying about in the grass and the bird became uncomfortable, though it was some time before it left its perch. When it did so it moved with a peculiar half-flying, half-creeping or climbing motion, *e. g.*, it *ran* down a sapling, or looked as if it did so, using its broad tail freely to balance itself. It finally disappeared in the grass under a little bush, from which I started it again, but not before I was almost treading upon it. My field-glass enabled me to see the bird almost as well as if it had been in my hands.—W. WARDE FOWLER (Lincoln College, Oxford). [Communicated by Mr. O. V. APLIN].

Waxwings in Cumberland.—About six examples of *Ampelis garrulus* were shot in the Carlisle district between December and February, 1882–3, an old female and a young male being obtained within 30 yards of a farmhouse at Cotehill. Early in March I spent a day in searching for the only member of the flock surviving; but, though it had been seen shortly before, I never caught a glimpse of it; nor did I hear the call-note, which I know well. All those shot had been gorging themselves on the berries of the wild rose.—H. A. MACPHERSON.

Black Redstart in Kent in May.—On May 9th, having been fishing in some preserved water in this neighbourhood, I saw a Black Redstart. I was in a waggonette at the time on my way home, and my keeper was with me and saw the bird as well very clearly. The bird was an old male, as I inferred from the plumage being perfect. It was close to the road and very

near me when I first observed it; and after settling twice on the ground, just before my waggonette, it flew into a large group of ash and sycamore, and settled *against* the trunk of a tree near to the ground, running up the bark for a few feet in a diagonal position apparently with ease. It then flew off the trunk into the foliage, and I lost sight of it. Gould describes the bird as a winter visitor, "arriving in autumn, and taking its departure when winter is over." The bird that I saw on June 9th has appeared therefore at an exceptional season; and since France and Belgium are mentioned as its breeding places there seems to be no reason why it should not breed here, and possibly there may be a pair in the locality where I saw the male. I have mentioned the circumstance to the owner of the place,—a park in this neighbourhood; and if there is a pair breeding it is possible that they may be observed.—W. OXENDEN HAMMOND (St. Albans Court, near Wingham).

[The Black Redstart is said to have bred in Nottinghamshire.—ED.]

Pied Flycatcher in Northamptonshire.—I have in my possession a male specimen of the Pied Flycatcher, *Muscicapa atricapilla*, which was shot at Haileston, four miles from Northampton, on the 1st May last. I know of no instance of any specimen of this bird having been obtained in this county before.—W. TOMALIN (Northampton).

French Partridge nesting on a Rick.—On returning home this evening (June 7th) I found on my table some eggs of the French Partridge, and, on enquiring where they had come from, I was told that they had been taken from the top of a straw rick. I went with the farmer to the place, and he stated that, when taking down the straw to sell, his man found the nest at the very top. He went up to look at it, and found thirteen eggs. He would have left the nest, but had to continue taking the bundles from that end of the rick. It would have been interesting to see how the old bird would have got the young ones down, for the height was at least twenty feet from the ground.—H. EVELYN RAWSON.

[On June 13th, as we learn from another source, a nest, with thirteen eggs, of this bird was found on a rick at Bishops Waltham.—ED.]

Imported Game Birds in the English Markets.—I am rather surprised not to have seen any notice of the remarkable abundance of the Black Grouse in every poulterer's stall last March. These birds appear to have signalised the close of the game season by arriving in immense numbers, far exceeding the usual supply. They were speedily dispersed over the country, and sold at six shillings and seven shillings a brace. Having applied to Messrs. Hunter and Son, of Leadenhall Market, I was informed that in February they sold between 400 and 500, and in March nearly 350; but this did not represent a tenth part of the number sold in the market, or sent to provincial dealers all over the kingdom. Hazel Grouse, which,

until a few years ago, it was most unusual to see, were far more abundant than they have been before. It is likely they will rise into greater favour, for they have delicate white flesh, are excellent eating, and sell readily at from three shillings to four shillings a brace. Willow Grouse (called "Ptarmigan" by the dealers), on the other hand, were very far from being in their customary abundance. Nineteen-twentieths of the so-called Ptarmigan are Willow Grouse, and the reason I take to be, not so much that the true Ptarmigan lives in inaccessible places, as that it is far less numerous as a species. One game-dealer received a consignment of the Grey Partridge from Russia, very slightly differing in plumage from our own, which is considered to be exactly the same species, the principal difference being in the pectoral spot, or horse-shoe, which in some of the old males was a deep chocolate, almost black on the edges. If any evidence were wanting that game-birds are not decreasing,—although Black Grouse may be suffering in some parts from drainage, and Quails from their indiscriminate massacre in spring,—a single glance at the cargoes which come to this country in the winter ought to be enough. It is probable that Norway, Sweden, Russia, and Germany furnished the Black Grouse which came over last winter, and no doubt plenty more remain where so many came from. One hundred Waxwings were sent from Russia, as I was informed by Mr. Brazener, of Brighton, at whose shop several of them may be seen, set up as beautifully as any English specimen. These came with the game, but were no doubt intended for the benefit of bird-stuffers, to whom of course they would be sold. In Russia many are sent to market, and sold for a few "copecks," with Pine Grosbeaks and other rarities.—J. H. GURNEY, JUN. (Northrepps, Norwich).

Hybrids amongst Birds.—In thanking Mr. J. H. Gurney, jun., for his notes on this subject (p. 256), I take the opportunity of making a few remarks on hybrids, including those he has specially mentioned. As regards the Blackbird and Thrush hybrids, I am, like himself, not a great believer in them, and I should be disposed to doubt their existence altogether unless I had something more decidedly apparent than mere brown colour on a Blackbird—as, for instance, the spotted breast-feathers and shorter tail of the Thrush, either one or the other being sure to appear on a true Blackbird and Thrush hybrid. I believe that wild-bred hybrids are extremely rare, and are generally, if not always, produced through either one or the other of the parent birds being unable to obtain a proper mate, and this would be exceedingly unlikely in the case of either the Blackbird or the Thrush. Some years since, when Black-game were very scarce—in fact, nearly extinct—in the adjoining county of Carmarthen, I heard of an old Blackcock that always accompanied some hen Pheasants on the farm where he had been bred, his Grey-hens having unfortunately been killed. Some hybrids were the result, some of which were killed, and, I regret to add, eaten.

My informant tells me that they very much resembled a hen Pheasant in shape and plumage, the cross showing itself in a slight leg-feathering and in the dark and light-coloured flesh on the breast, as in the Black-game; he also adds that the flavour was delicious, surpassing, in his opinion, the best Pheasant he had ever eaten. Soon after this, a fresh stock of Black-game spread from this county into Carmarthenshire, where they have since increased to an extraordinary degree; Grey-hens became abundant, and from this time I have heard of no more hybrids being killed. In fact, the old Black-cock above alluded to returned to the Grey-hens the moment he had the opportunity. I mention this because I think it shows a good reason, though perhaps not a conclusive one, for the production of wild-bred hybrids. Will Mr. Gurney kindly say if the hybrids he mentions between the Greenfinch and the Linnet were wild-bred? because there is such a dissimilarity in size between the two birds that it makes one rather sceptical. I can understand the Hooded Crow mating occasionally with the Carrion Crow, as they are so very nearly allied. I am not aware whether this is a common cross or not, and I fancy there must be some good reason for its taking place, which might possibly be detected by careful observation before or during mating. The breeding of the two Redpolls is also somewhat uncertain, as I imagine size would be almost the only indication. From these remarks it will be gathered that I believe Nature runs strictly in her own allotted grooves, and it is only when she fails to do so that the survivor seeks for a mate as nearly as possible allied to his or her species, and the result is, after all, only hybrids incapable of breeding *inter se*. The whole subject is, however, most interesting, and so little is known of the cause of the production of wild-bred hybrids that any information will be most acceptable.—E. CAMBRIDGE PHILLIPS (The Elms, Brecon, S. Wales).

Hybrid between Greenfinch and Linnet.—I have in my collection of varieties a hybrid of this kind caught in a wild state in Cambridgeshire; also one between a Goldfinch and a Linnet, shot near Mansfield.—J. WHITAKER (Rainworth Lodge, near Mansfield, Notts).

Yellow Wagtail in Co. Dublin.—During the first week of June, when walking with my wife along the shore from Malahide to Portmarnock, she drew my attention to a very pretty yellow bird perched on the branch of an old elder bush. I thought at first it might be a bright-coloured specimen of the Grey Wagtail, *Motacilla sulphurea*, but the absence of the triangular black patch on the throat made me observe the bird more closely. As Knapp says ('Journal of a Naturalist'), it seemed to court attention, and gave us ample opportunity of observing its plumage and movements. On reaching home I consulted Knapp, Yarrell (4th edit.), Harting ('Our Summer Migrants'), and our Irish authorities, Thompson and Watters, and found the plumage to be as therein described. It is the rarest of our three Irish

Wagtails, and when it does pay us one of its "few and far-between" visits, it generally chooses the shores of Lough Neagh as a summer residence. Of four specimens in the Royal Dublin Society's Museum three are from Lough Neagh, and the fourth from Baldoyle, a few miles from my observation. The Grey Wagtail—a common enough bird in the city—is perfectly familiar to me, and I have no doubt whatever that the pretty bird I saw at Malahide was the Yellow Wagtail, *Motacilla Raii*. — J. ROYSTON (35, Bloomfield Avenue, Dublin).

Cuckoo's Egg in a Thrush's Nest.—A Cuckoo's egg was taken out of a Song Thrush's nest here the other day. It is the first instance, so far as I know, in this neighbourhood of the Cuckoo's egg having been found in the nest of the Thrush. We have taken several Cuckoos' eggs this season, but, with this exception, all from the nests of the smaller birds.—JOHN H. WILLMORE (Queenwood College, near Stockbridge, Hants).

[The Song Thrush is one of the least common amongst the foster parents of the Cuckoo. Other instances of the kind have been previously recorded, but they are certainly rare. See 'The Ibis,' 1865, pp. 178—186.—ED.]

REPTILES.

Food of the Common Ringed Snake.—Mr. Stradling, in his very interesting paper in 'The Zoologist' on the treatment of Snakes, states (p. 248) that in the case of the Common Ringed Snake its "favourite food is frogs." I may mention that I have, in former years, examined many of these snakes, and have come to the conclusion that they prey chiefly on toads, which I have found to form the most frequent contents of the Common Snake's stomach.—J. H. GURNEY (Northrepps Hall, Norwich).

Ground Colour of the Viper.—I have often observed how closely the ground colour of the Viper (*Pelias berus*) agrees with that of the soil on which it is found. On the Cotteswolds we have the white, red, and dark brown varieties. I have always found the white variety living in a white stone wall, the brown variety on the Fuller's earth and inferior oolite, and the darker variety on a darker soil.—C. WITCHELL (Stroud).

Origin of the Name "Gavial."—In last month's 'Zoologist' I observe that the Long-nosed Crocodile of the Ganges is called by Mr. Francis Day the *Gavial*. The prevailing name of the reptile in the language of the Hindoos of the Ganges Valley is *Ghariyal*; and it is my impression that this word having been first written *Garial* in English, was in the course of correspondence converted into *Gavial* by the letter *r* being mistaken for a *v*. If my impression is well founded, naturalists may think it worth while to adopt the correct transliteration of the Hindi word, and establish in their literature the form *Ghariyal*. Mr. Day is, I presume, the author of the well-known work on Indian Fishes; if so, his experience of the Indian

Continent was, I believe, mainly confined to the Madras Presidency, where the vernacular of Gangetic India is a foreign tongue.—C. DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

FISHES.

Sea Lamprey killed by an Otter.—On May 29th I had an opportunity of examining a large Sea Lamprey, *Petromyzon marinus*, which had been rescued from the jaws of an Otter by a keeper, who was walking on the banks of the tidal portion of the River Tavy. It was an exceedingly fine specimen, full of spawn, measuring $33\frac{1}{2}$ inches in length and turned the scale at three pounds. On seeing the keeper, the Otter made off, leaving its prey behind. Sea Lampreys are by no means common with us.—JOHN GATCOMBE (55, Durnford Street, Stonehouse, Devon).

A Conger in a Lobster pot.—Last May, during a visit to Jersey, I went with a fisherman to visit his Lobster pots, with the idea of obtaining any interesting Crustacea that might have entered with the Lobsters. We were not very successful: one pot contained a large number of the common *Carcinus manas*, of a variety of colour and markings; in others we found *Portunus puber*, *Cancer pagurus*, *Palaemon serratus*, and *Pagurus bernhardus*. Of course there was a quantity of molluscs, and a few fish. Presently we hauled a pot that contained a good-sized Conger; in fact he had just managed to get into the pot; but the remarkable part of it was that he had swallowed the bait and hook on one string (the bait being hung to the lip of the pot on a large hook attached to about nine inches of string). He had then evidently managed to reach and swallow another bait and hook, for when we found him he was firmly fixed, the two lines being taut, and diverging from his mouth to the two opposite sides of the pot's mouth. The voracity of these animals does not appear to be in any way interfered with by bodily pain, for it was evident that this fellow had the first hook pretty firmly embedded in his gullet before he attacked the second.—EDWARD LOVETT (Croydon).

MOLLUSCA.

***Limax cinereo-niger* an Addition to the List of British Slugs.**—Until now this species—a conspicuously marked and readily recognisable form—has been regarded by British conchologists as a form or variety of *L. maximus*. It is now regarded by the best continental authorities as a valid and distinct species. It differs both in external and in anatomical characters, the latter turning upon the structure of the generative organs. Its external diagnostic characters are the following:—The shield is unicolorous, without markings, or only exhibiting slight traces towards the margin; the respiratory orifice is margined with a darker hue of the body-colour; the body is, like the shield, usually unicolorous; the dorsal keel and a line continuing it to the posterior extremity of the shield are usually

conspicuously different in colour from the general tint of the body; and the sole, or lower surface of the foot, is divided longitudinally (by two furrows) into three differently-coloured bands, the median one being white, and the two lateral ones dark. Speaking roughly, the typical examples may be described as being uniformly black, with a white line down the middle of the black, and a longitudinal median white fascia on the foot. It, however, varies to a large extent. Some specimens have occasional white blotches on the dark body, and others are uniformly black, not even the keel being light. This slug has occurred in these islands, but as not very much attention has been paid to slugs in Britain we know next to nothing of its range. Forty years ago the Rev. B. J. Clarke, who paid considerable attention to the Irish slugs, found this form at Spire Hill, Queen's County; and Mr. Robert Ball found it in the County Cork. Twenty years later the Rev. A. Merle Norman, when studying the inland Mollusca of Somersetshire, found a specimen in Cleeve Combe which he describes as "altogether pitchy black, without spot or marking of any kind, and fully six inches long." This was evidently the var. *nigra* of *L. cinereo-niger*. On the Continent the typical *L. cinereo-niger* has a wide range. It is found in France, Italy, Germany, Transylvania, Scandinavia, &c., and it would be a point of very great interest to determine its actual range in the British Isles. To this end I should be glad to be favoured with specimens of this (and indeed of any British slugs) from as many localities as possible. Among the slugs there is a wide and interesting field of investigation open, and but few have attempted the study. — WM. DENISON ROEBUCK (Sunny Bank, Leeds).

ANNELIDES.

Earthworms and their Distribution.—At a time when so much interest has been aroused in the habits and life-history of Earthworms by the publication of Mr. Darwin's work on that subject, I feel sure that a paragraph in a letter received not long since from my friend Mr. E. E. T. Seton, of Carbery, Manitoba, will prove acceptable. Darwin says that Earthworms occur in nearly all parts of the world, even in Iceland, and I believe the United States (I have no copy of his work at hand), but my friend writes of his neighbourhood that, "Notwithstanding Darwin (peace to his ashes!), there is not the ghost of an Earthworm within hundreds of miles south, and never has been." This, it must be remembered, is in a country the great fertility of which is always attributed to the layer of black surface-soil a foot or more thick, and extending for hundreds of miles either way, if not entirely across the continent of North America. At first thought one would naturally regard this as "vegetable-mould" due to the action of worms, but under the circumstances it seems as if some other explanation were necessary.—R. M. CHRISTY (Chignal St. James, near Chelmsford).

ARCHÆOLOGY.

A Whale in the Thames in 1658.—A fuller description of the Greenwich Whale referred to at p. 131 as advertised in the 'Mercurius Politicus,' June 3rd, 1658, will be found in the 'Diary of John Evelyn,' under the same date. The Whale referred to is clearly the same in both cases.—H. A. MACPHERSON (Carlisle).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 3, 1883.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Sig. O. Beccari and Dr. J. Lange were elected Foreign Members of the Society.

Mr. William Galloway exhibited an extensive series of the osseous remains of the Great Auk, Otter, and other animals, along with bone implements, being part of the material dug out of the mound of Caistednan-Gillea, in Oransay, by himself and Mr. S. Grieve in 1881–82.

A second contribution on the *Asteroidea* of the 'Challenger' Expedition, by Mr. W. Percy Sladen, was read. In this the author draws attention to the "cribriform organs," peculiar structures associated with special functions found in *Porcellanaster*, but as yet unknown in other Starfishes. The organs in question are situated on the marginal plates in the intertrachial angles, and they may vary from one to seven in number. They consist of greatly compressed spinelets or lamellæ ranged in vertical parallel lines, and invested with a membrane, which appears to have been furnished with vibratile cilia. Functionally they may act as percolators, and lie homologous with the minute ciliary spines bordering the vertical furrows of the marginal plates of *Astropecten* and other forms. In *Porcellanaster* they are strictly lamellar, whilst they are papelliform in the allied genera *Hyphaster*, *Styracaster*, and *Thoracaster*. Mr. Sladen further describes in detail the last-mentioned three new genera—of five in all; and of twenty-seven species some twenty-one are entirely new to science.

There followed a paper by Mr. George Brook, "A Revision of the Genus *Entomobrya*, Rond. (= *Degeeria*, Nicolet)." In this communication a historical *resumé* is given of what divisions, &c., of the group of *Poduræ* more immediately under consideration have been made by previous observers. From researches into the literature and his own observations, the author arrives at the conclusion that in the genus *Entomobrya* we have a common widely distributed form, which, at different ages and under different con-

ditions, presents gradations of colour from the light to the dark shade, and these have been named accordingly as separate sorts by various authors. Something of a similar kind has already been proved to occur in *Orchesella cincta*, Linn. References, descriptions, and synonyms are given of several species, both new and of those already known, to which are added figures of the insects themselves and their structural peculiarities.

The nineteenth contribution to the molluscan fauna of the 'Challenger' Expedition, by the Rev. R. Boog Watson, was read, in which descriptions are given of a number of new species of *Bullidæ*.

ANNIVERSARY MEETING, May 24, 1883.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Mr. R. M'Lachlan, for the Audit Committee, read the statement of receipts and payments for the year. The Treasurer (Mr. Frank Crisp) followed with a detailed explanation of the various items; £750 had been invested, making a total of about £5000, and a balance at bankers (30th April) still remained of £514 8s. 7d.

The Secretary (Mr. B. D. Jackson) read his annual report. Since the last anniversary eleven Fellows and one Foreign Member had died and eleven withdrawn, while fifty-four new Fellows had been elected. Between purchase, exchange and donations, 407 volumes and 442 separate parts had been added to the Library.

Mr. G. J. Romanes, on behalf of the subscribers, formally handed over the portrait of Charles Darwin, painted by Mr. J. Collier, its exhibition at the Royal Academy last year having then prevented its presentation. A bust of the late Prof. Louis Agassiz, by the American sculptor, Mr. Hiram Power, was handed over by Prof. Allman to the Society as a present from the sculptor's son, Mr. H. Power, of Florence. An engraving from Gainsborough's painting of the English naturalist Thomas Pennant was presented by Mr. Howard Saunders, in the name of Mrs. Alston, as a bequest from her son, the Society's late Secretary, Mr. E. R. Alston.

The President then delivered his anniversary address, commenting generally on the events of the past year, with special reference to their bearing upon the Society. In congratulating the Society on its annual balance sheet he reminded the Fellows that, besides investments, the property of the Society might be valued at £25,000, or a total of £30,000. He alluded to Colonial Fellows and the good scientific work they are doing, incidentally referring to the British Association meeting in Canada in 1884. Reference was also made to the progress of re-arrangement of the biological collections in the new Natural History Museum at South Kensington.

This was followed by reports on the various botanical and zoological publications issued at home and abroad during the last twelve months. Remarks were made on the stock of the Society's 'Journals' and

'Transactions'; also on the purchase of a portrait of Jacob Bobart (1598—1679), and the President himself presented a valuable portrait of Linnæus, from life, by his countryman Magnus Hallman.

A resolution was unanimously accorded by the Society, at the instance of the chair, to Mr. G. Bentham and Sir J. D. Hooker, on the completion of their great work, the 'Genera Plantarum.'

The obituary notices of deceased Fellows was read by the Secretary. Of zoologists the sudden loss in early life of Professor F. M. Balfour, of Cambridge, and Mr. W. A. Forbes, Prosector to the Zoological Society, being deplored.

The Scrutineers having examined the ballot then reported that Mr. T. Christy, Mr. H. E. Dresser, Mr. G. Murray, Mr. H. Saunders, and Mr. H. T. Stainton had been elected into the Council in the room of Mr. H. W. Bates, Mr. G. Busk, Mr. C. B. Clarke, Sir John Kirk, and Mr. R. M. Lachlan, who retired; and for officers, Sir J. Lubbock as President, Mr. Frank Crisp as Treasurer, and Mr. B. Daydon Jackson and Mr. G. J. Romanes as Secretaries.

June 7, 1883.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Mr. R. J. Clarke and Mr. Frank Matthews were elected Fellows of the Society.

Mr. George Murray exhibited specimens of Dace killed by the fungus disease (*Saprolegnea ferax*), the result of inoculation, and said to be the first recorded experimental proof of the communicability of the disease to those fish.

Prof. Cobbold exhibited some shrimps sent by Dr. Burge, of Shanghai. They contained immature flukes, which it was thought might prove to be the larval state of one or other of the three species of human fluke known to infest man in eastern countries. He proposed to call the parasite *Cercoaria Burgei*.

A communication was read from Mr. George Lewis, "On Japan *Brenthidæ*, and Notes of their Habits." These beetles form part of the collection made by the author in his visit to Japan during the summers of 1880—81. The author observes there is no geographical barrier sufficient to exclude tropical forms from Japan, but their environment when they reach it prevents them from establishing themselves, to any great extent at least, in the northern parts. In the southern islands of the Japanese Archipelago the warmer climate enables a fair number of beetles of a truly tropical type to exist. The fact that each genus is only represented by one species nevertheless points to some physical check in their spread and numbers. A new genus, *Higonius*, is characterised, and several species of this and other genera described and illustrated.

A short record of "Observations on the White Ants (*Termites*) of Rangoon," by Dr. Robert Romanes, was read by the Secretary. In this the details are given of what he saw in the swarming of a nest.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

June 5, 1883.—OSBERT SALVIN, Esq., F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, and called special attention to a female Mule Deer, *Cervus macrotis*, presented by Dr. J. D. Caton; and to a Great Black Cockatoo, *Microglossa aterrima*, and a Bluish Shrew, *Crocidura carulescens*, obtained by purchase.

Mr. Sclater exhibited and made remarks on two birds obtained near Lima by Prof. W. Nation, and on a collection of birds made in New Britain, New Ireland, and the Solomon Islands, that had been sent to him for examination by the Rev. George Brown.

Mr. Sclater also called the attention of the meeting to a Condor from Peru, living in the Society's Gardens since 1877, which he was induced to believe was a specimen of the "*Condor pardo*," or *Sarcorhamphus æquatorialis*, Sharpe.

Mr. G. French Angas exhibited a collection of Butterflies made during a recent visit to the island of Dominica, West Indies.

A communication was read from Prof. Owen, entitled "Embryological Testimony to General Homology."

A communication was read from the Rev. O. P. Cambridge on some new genera and species of spiders. Eight spiders, representing as many new genera, were described; two of them belonged to the family *Theraphoridae*, one to the *Drussidae*, and the others to the *Thomisidae*. Three of these species were from Ceylon, three from Caffraria, one from New Zealand, and one from California.

A communication was read from Mr. A. G. Butler, containing an account of the Lepidoptera collected by Mr. H. O. Forbes in the islands of the Timor-Laut group. Examples of twenty-three species were obtained.

A communication was read from Mr. Herbert Druce, containing descriptions of some new species of moths of the families *Zyganidae* and *Arctiidae*, mostly collected in Ecuador by Mr. C. Buckley. The number of new species described was fifty, belonging to twenty-four genera.

A paper was read by Messrs. Godman and Salvin, containing remarks on the variations of certain species of butterflies of the genus *Agrias*.

Mr. G. A. Boulenger read a report on a collection of Reptiles and Batrachians from the Timor-Laut group of islands, formed by Mr. H. O. Forbes. Two new species were described—the one a lizard of the Australian

genus *Lophognathus*, and the other a snake of the Indian genus *Simotes*, proposed to be named respectively *L. maculilabris* and *S. Forbesii*. The snake was of special interest, as no species of the genus *Simotes* had hitherto been previously known to occur eastward of Java.

June 19, 1883.—Prof. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of May, and called special attention to a fine example of the Surucucu or Bush-master Snake of South America, *Lachesis mutus*, presented by Mr. H. Y. Barkley, of Pernambuco, on the 22nd of May.

The Secretary read an extract from a letter received from Mr. Albert A. C. Le Souëf, containing observations on the coloration of the plumage of the Satin Bower-bird, *Ptilonorhynchus holosericeus*.

Prof. E. Ray Lankester read a memoir on the muscular and endoskeletal systems of *Limulus* and *Scorpio*, drawn up by himself with the assistance of his two pupils, Mr. W. J. Barham and Miss E. M. Beck. These investigations seem to confirm Prof. Lankester's previously expressed views as to the near affinity of these two forms, hitherto usually referred to different classes of the Animal Kingdom, and to justify the association of *Limulus* with the Arachnida.

A paper was read by Dr. Gwyn Jeffreys, on the Mollusca procured during the cruise of H.M.S. 'Triton' between the Hebrides and Faroes in 1882. Ten new species of Gastropoda were described, and another species (*Fusus Sabini*) was fully diagnosed. The chief interest of the paper consisted in the distinction of the Mollusca inhabiting the "warm" and "cold" areas of that sea-bed, in accordance with the views of Dr. Carpenter and the late Sir Wyville Thomson.

A communication was read from Mr. Martin Jacoby, containing descriptions of some new species of Beetles belonging to the family *Galerucidæ*.

Prof. P. Martin Duncan read a paper on the Madreporarian genus *Phymastræa* of Milne-Edwards and Jules Haime, and gave the description of a new species obtained on the west coast of India, which he proposed to call *Phymastræa irregularis*.

Dr. J. S. Garson read a paper on the anatomy of the Pygmy Hog of Nepaul (*Porcula salvania* of Hodgson), as exhibited in a female specimen of this animal which had lately died in the Society's Gardens. Dr. Garson came to the conclusion that this animal was not sufficiently different from the true Pigs (*Sus*) to warrant its generic separation.

A communication was read from Mr. Osbert Salvin, containing an account of a series of birds collected by Capt. A. M. Markham, R.N., at various points of the western shores of the Pacific, from Esquimault on the

north to the Straits of Magellan on the south, including some from the Galapagos Islands and from the island of Juan Fernandez.

Mr. E. W. White read some notes on the birds of the Argentine Republic, being a supplement to two former papers read before the Society on the same subject.

A communication was read from Mr. A. Boucard, containing an account of a collection of birds made in Yucatan by Mr. Gaumer.

This Meeting closes the present session. There will be no more scientific meetings until the commencement of the next session, 1883-1884, in November next.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

Grouse Disease ; its Causes and Remedies. By D. F. MACDONALD, LL.D., &c. 8vo, pp. 182, with illustrations. London: W. H. Allen & Co. 1883.

THE precise nature of the Grouse Disease is still so far from being properly understood that any new publication on the subject would be likely to prove attractive, not only to naturalists, but more especially to sportsmen, whose interests are liable to be so seriously affected by the spread of this disorder.

Opinions hitherto expressed on the subject have been many and various. By some the disease is viewed as a contagious epidemic like cholera. Others regard it as a parasitic disorder. Others again consider it due to atmospheric influences, overstocking, and an unhealthy condition, which forms the principal food of Grouse, and ought to be periodically burnt.

Not long since Mr. J. A. Harvie Brown communicated to this journal (November, 1882) his views respecting the Grouse disease, which he believes is to be attributed to a variety of causes, amongst which he specifies overstocking, over-preservation, indiscriminate slaughter of so-called "vermin," and an unwholesome condition of the heather, after severe late frosts.

Dr. Macdonald thus sums up his own opinion in the matter :—
"That it is caused by the mismanagement of the moors, insufficiency of natural food, by want of systematic heath-burning, by too great a preponderance of sheep, which nibble the heather-tops, overstocking, severe frost, excessive rain, and the extermination of the birds and beasts of prey."

In this comprehensive expression of opinion, Dr. Macdonald would seem to have merely adopted the most plausible of the many theories advanced by previous writers, telling us nothing new about any of them. His book is on this account a disappointing one, and its utility, even as a compilation, is not a little marred by the amount of irrelevant matter which has been introduced on subjects which have no connection with the question of Grouse disease.

The illustrations, six in number, by A. T. Elwes, depict the Capercaillie, Blackcock and Greyhen, Red Grouse and Ptarmigan, and are spiritedly drawn, though in most of them the outlines strike us as being rather hard.

Another Book of Scraps, principally relating to Natural History: with thirty-six lithographic illustrations from pen-and-ink sketches of Wild Birds. By CHARLES MURRAY ADAMSON. Oblong 4to. Newcastle-on-Tyne: A. Reid, and Mawson and Co. 1883.

IN 'The Zoologist,' 1882 (p. 501), will be found a notice of a former Book of Scraps by Mr. Adamson, similar in character to that now before us, though somewhat smaller in size, being an octavo instead of an oblong quarto.

The merit of the present publication lies in the cleverly reproduced pen-and-ink sketches, thirty-six in number, of groups of wildfowl and seafowl in characteristic attitudes. They are little more than outlines, although in most cases these are very true to nature, and betoken an observant eye and skilful hand on the part of the draughtsman.

Mr. Adamson has the happy knack of hitting off with a few bold touches the characteristic attitudes of birds, both at rest and in motion, and with some of the species he has been very successful in depicting their appearance on the wing; so much so that it is impossible to mistake the species for which they are intended. To naturalists his book will recall to mind many a truthful scene of bird-life as viewed along shore, or in the marsh, while to artists it will certainly offer many pleasing suggestions.

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THIRD SERIES.

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[No. 80.]

ORNITHOLOGICAL NOTES FROM NORFOLK.

BY HENRY STEVENSON, F.L.S.

IN continuation of former records which I have forwarded for publication in 'The Zoologist,' I now send my ornithological notes relating to Norfolk for the year 1881.

JANUARY.

STORM PETREL.—A single bird was shot early this month on the coast near Yarmouth.

SHORE LARK.—Two specimens were sent up from Yarmouth on the 10th.

GOOSANDER.—Three fine old males were shot this month at Yarmouth, one on the 7th, and two between the 26th and 30th; and several young males and females.

SCLAVONIAN GREBE.—One was caught in an exhausted state on the 26th, on the rocks, at low water, between Runton and Beeston. The iris was deep orange-red, with a narrow golden circle next the pupil.

GREAT GREY SHRIKE.—One was killed at Flegg Burgh, near Yarmouth, on the 26th, and another at Fundenhall, near Wymondham, on the 18th.

HAWFINCH.—These birds, I am sorry to say, were shot in considerable numbers this month, when pinched for food in the terrible weather that prevailed about the 18th; and one birdstuffer alone, in Norwich, received twenty specimens between the 18th and 30th, of which, singularly enough, only three were females. As all these birds were killed over a wide area of the county, and quite

inland, and chiefly from localities where they are known, or would be likely to breed, I am inclined to think them residents rather than migrants, as three killed at, or close to Yarmouth, about the same time, probably were.

WOOD LARK.—Two of these birds were obtained on the 14th, and two more on the 15th, upon the Denes at Caister, near Yarmouth, a strange locality and season, as well, for a summer migrant scarce enough, and extremely local, in its nesting haunts on the western side of the county.

GLAUCOUS GULL.—Mr. G. Smith, of Yarmouth, received this month twenty-seven of these fine Gulls, killed out in the North Sea, probably on the "Dogger Bank," and brought in by the fishing-smacks. Of these, seven were fully adult. He had also, at the same time, some remarkably fine adult Great Black-backed and Herring Gulls.

WILD GEESE.—Brent Geese were very plentiful at Yarmouth early in the month during the severe frost, and a good many were killed both on the beach and on Breydon. On the 21st two Bean Geese were killed at Hunstanton, and one Egyptian Goose, probably a semi-domesticated bird, and on the same day two Bernicle Geese on Breydon. Another Bean Goose was shot at Yarmouth on the 30th.

SMEW.—A young male and an adult female were shot on Breydon on the 15th, and another old female on the 19th, and two on the 27th. Two young birds were also shot at Taverham, near Norwich, on the 29th.

WATER RAIL.—A considerable number of these birds were observed in Yarmouth market on the 9th.

BEWICK SWAN.—A single bird was shot in Breydon marshes on the 21st. Two Wild Swans were also seen on the 19th, as far inland as the river between Hellesdon and Drayton, near Norwich.

SHELDRAKE. — A considerable number of these birds, adult and immature, were shot on the coast during this month.

RED-NECKED GREBE.—An adult bird in winter plumage was shot at Hickling on the 27th, and another on Breydon on the 30th.

GREAT INFLUX OF SKY LARKS.—Mr. F. D'A. Newcome, of Feltwell, has kindly supplied me with the following particulars of a remarkable immigration of Sky Larks, towards the end of January, into the cultivated portion of the Feltwell Fen. His uncle and himself bought one hundred and nineteen dozen and

five, all taken in "hingles." These must have been brought in about January 29th. He does not think any were taken before the storm on the 18th, and he paid afterwards for seventeen dozen more. Probably all were caught between January 18th and the 3rd or 4th of February, all the fields being nearly bare of snow from the high wind on the 18th. The Larks stayed some time, and did not lose condition till just at the end of their visit to that neighbourhood. The great passage was on the 17th, the day before the storm; and he heard there was a great passage on the same day at Lyndhurst, in Hampshire, all the birds going S.W.

FEBRUARY.

WILD GEESE.—A good many Brents were shot on Breydon early this month, after the frost had abated; and eleven Geese, supposed to be Greylags, were seen there on the 5th, and some Wild Swans at the same time. About thirty Geese, probably Pink-footed, appeared on Breydon on the 15th.

BITTERN.—One shot near Yarmouth on the 9th.

GOOSANDER.—A fine adult female was shot at Potter Heigham on the 12th. A female was also seen, with other fowl, on Gunton Lake, near Cromer, on the 26th.

GREAT CRESTED GREBE.—A young bird was shot near Yarmouth on the 6th, and some half-dozen specimens were seen in Yarmouth market between the 1st and 15th of this month. One was already in part summer plumage.

RED-NECKED GREBE.—One sent up to Norwich from the coast on the 13th.

RINGED GUILLEMOT.—An example of this variety of the Common Guillemot was shot at Yarmouth during the last week of this month. It occurs but rarely on our coast.

GANNET.—Like the Glaucous Gulls, an unusual number of these birds, some fine adult specimens, were brought to Yarmouth by the smacksmen from the North Sea this winter.

SCLAVONIAN GREBE.—On the 26th an adult bird, in winter plumage, was killed near Yarmouth.

LESSER SPOTTED WOODPECKER.—A specimen was shot at Harleston early in the month, decidedly rare in that neighbourhood. Many Green Woodpeckers were either shot or found dead during the severe frost.

SHORE LARK.—Two shot at Wells on the 12th.

GREAT GREY SHRIKE.—A male killed at Potter Heigham on the 26th; and another, about the same time, somewhere in the county. One birdstuffer informs me that of three specimens brought to him this winter, each had the remains of a mouse in its stomach.

MARCH.

GREAT CRESTED GREBE.—Mr. J. H. Gurney, jun., saw on Ranworth Broad, on the 18th, with various kinds of wild-fowl, no less than twelve Great Crested Grebes, some in breeding and some in winter plumage—a difference of age, no doubt, as in my aviary-birds I always find the oldest assume their summer dress earliest.

SMEW.—Two old males in fine plumage were shot at Hickling on the 6th.

MAGPIE.—Two seen at Northrepps on the 15th, two on the 24th near the same spot, and one on the 25th.

HAWFINCH.—One shot near Wymondham on the 19th.

APRIL.

LESSER SPOTTED WOODPECKER.—The Rev. H. T. Frere, of Burston, informs me that a bird of this species was killed by a dog in a garden at Diss, about the middle of this month, making the fourth, within two or three years, he has known of in that neighbourhood.

SMEW.—Two of these birds were shot at Ranworth on the 25th of this month—a remarkably late occurrence of this species.

MAY.

ARRIVAL OF MIGRANTS.—The following are a few notes on “first observations” of spring migrants:—Chiffchaff, March 17th, East Norfolk; 18th, Ranworth. Wryneck, March 26th, Harleston. Pied Wagtail, March 24th, eight seen together in a ploughed field at Northrepps. Wheatear, April 3rd, Overstrand. Blackcap, April 3rd, seen and heard at Northrepps. Willow Warbler, April 10th, Norwich; 17th, Northrepps. Cuckoo, April 15th, Northrepps. Ring Ouzel, April 19th, Burston; 20th, Northrepps. Nightingale, April 11th, Norwich; 13th, Thorpe. Yellow Wagtail, April 22nd, Carrow. Swallow, April 21st, Carrow; 23rd, a migratory flock were seen to alight on Cossey Hall in the evening; 27th, Northrepps. Sand Martin, April 21st, Carrow. House Martin, April 21st, Carrow. Redstart, April 24th, Northrepps. Turtle Dove,

May 3rd, Northrepps. Spotted Flycatcher, May 7th, Northrepps; 16th, Norwich. Swift, May 2nd, Yarmouth; 14th, Norwich; 16th, Cromer and Keswick. Corn Crake, May 13th, Northrepps. Goat-sucker, May 14th, Northrepps.

CORMORANT.—On May 14th seven of these birds, in company, were observed flying towards the sea at Yarmouth.

SPOONBILL.—Five were seen at 4 a.m. on Breydon, on the 19th, four of which were sleeping with their heads thrown back and buried in their feathers, whilst one apparently stood sentinel, and about twenty large Gulls were in company with them. These passed on, unmolested, but two were recorded as killed at Orford, in Suffolk, on the 21st, which, possibly, were part of the same flock.

BLACK TERN.—Several about Breydon on the 14th.

JUNE AND JULY.

MAGPIE.—About the 19th of June four young Magpies were seen in one of the coverts at Northrepps.

MUTE SWAN.—A pair of tame Swans at Keswick, near Norwich, this year brought off (May 27th) the prolific number of twelve cygnets, of which one was afterwards found dead. A few years back I knew of a pair on Surlingham Broad which, for several years in succession, reared ten and eleven cygnets, and once or twice the hen bird laid twelve eggs.

SPOONBILL.—A single bird on Breydon, June 23rd, escaped.

HERONS NESTING.—I was informed this year of a small heronry commenced in a plantation at Strumpshaw, near Brundall, on the Yare.

HOODED CROW.—About the 21st of July a Hooded Crow was seen near the cliff at Overstrand. The departure of the main body of these birds was witnessed at Northrepps on several occasions in the spring. On the 9th of March many were seen, with some Rooks, flying seawards, and very high in the air; and again, on the 16th and 17th, flocks of Grey Crows, Rooks, and Jackdaws were observed departing in the same manner; though a few of the former still remained, near the coast, up to the 3rd of April.

AUGUST.

NORFOLK PLOVER ATTACKED BY A HEN.—On the 2nd of this month, Mr. Callow, of Northrepps, heard a screaming noise in his stack-yard, which he found to proceed from a bird of this species

which a hen, in fear for her chickens, was severely buffeting. The bird, scared and exhausted, allowed Mr. Callow to capture it; and with one wing clipped, it was turned into a walled-in garden, where it remained till its death on the 31st of December. This species bred regularly a few years back on a lofty range of furze-covered hills at the back of Cromer and Runton, and this apparently adult bird may have wandered from that old haunt. This incident was recorded in 'The Zoologist' for 1881 (p. 384) by Mr. J. H. Gurney, jun.

SANDWICH TERN.—A female adult shot on Breydon on the 24th.

HOODED CROW.—Two were seen at Northrepps on the 31st, which fact, coupled with the late appearance before stated, in the same locality, seems to indicate nesting.

SWIFT.—Some still seen over the "Close," at Norwich on the 28th.

SEPTEMBER.

HOUSE MARTIN.—These birds, by no means plentiful this season in and around Norwich, began to gather together by the riverside at Heigham about the middle of the month, when some eighty or one hundred were seen together.

SPOTTED CRAKE.—An unusual number of this species were shot in our marshes during this month.

KENTISH PLOVER.—One of these Plovers, by no means common on our coast, was killed on Breydon on the 14th, and two others on the 24th and 25th, the latter on the beach. I also heard of one from the same locality, immature, in August.

GREY SHRIKE.—One seen about the middle of the month on the Denes at Yarmouth.

RED-NECKED PHALAROPE.—One example was shot on Breydon on the 4th; and another on the 29th at Hopton, swimming in a pond, with ducks, close to the road. Both immature.

GREYLAG GEESE.—Several flocks of this species were seen on Breydon on the 24th and 25th. Two of them were shot, and one sent to me.

BLUE-THROATED WARBLER.—A very immature specimen was shot at Cley by Mr. Power on the 3rd.

SMEW.—One shot at Filby this month.

GLOSSY IBIS.—Mr. Power's belief that he saw a bird of this kind at Cley, on the 6th, was no doubt well founded, as a male bird, in the possession of Mr. George Cresswell, was killed on the

Wolferton marshes, near Lynn, on the 16th. Others were seen at the same time, and a second example was said to have been shot. This occurrence was recorded by Mr. Southwell in 'The Zoologist' for 1881 (p. 465), and three others were subsequently recorded in the same journal as obtained in Lincolnshire, Hampshire, and at Balls Park, Hertfordshire, about the same time.

QUAIL.—One shot at Shotesham on the 6th; and another, in the same locality, on the 10th.

OCTOBER.

SHORE LARK.—I had a male sent me alive for my aviary from Yarmouth, on the 10th.

SUMMER MIGRANTS.—A Wheatear and Redstart were seen at Northrepps on the 13th, and a Goatsucker was shot on Yarmouth beach on the 23rd of September. On the 16th of October a Chiffchaff was killed at Yarmouth, and a House Martin seen October 16th. On the 5th two Ring Ouzels, one adult and one immature, were shot at Somerton.

SKUAS.—One Great Skua, two Pomatorhines (one black variety, the other white-breasted with dark bars), and an adult Richardson were shot off Yarmouth on the 3rd. Also two immature Richardson's on the 21st, two adult and one immature Buffon's Skuas about the 22nd, and an adult Pomatorhine on the 25th. The Great Skua is quite a rarity on our eastern coast; I have but one in my collection, and that from Lowestoft, Suffolk.

WOOD LARK.—A single bird was shot on Yarmouth Denes on the 5th—a strange date and locality.

SPOTTED CRAKE.—This species also occurred throughout this month in some numbers in the Broad district.

GREY CROW.—A considerable flock seen to arrive on the coast, about Northrepps, on the 4th.

RED-NECKED PHALAROPE.—An immature bird obtained at Yarmouth on the 3rd. Mr. Fenwick Hele also recorded in 'The Field' of October 26th two of these birds as shot at Aldeburgh, in Suffolk, a few days before.

SABINE'S GULL.—Two immature birds, male and female, were shot on Breydon on the 17th and 22nd; the first occurrence of this species in Norfolk. Two other examples, also young birds, were recorded in the 'Field' and 'Zoologist' as obtained, one at the mouth of the Liffey, and one at Dublin, in the previous month.

LITTLE GULL.—Two or three specimens shot on Breydon at the same time as the Sabine's Gulls; whence the report that five of these had been obtained.

STORM PETREL.—One shot at Gorleston on the 17th, and one at Cley on the 21st.

WILD GEESE.—A Bean Goose and Greylag Goose, both immature, were shot at Yarmouth on the 15th and 22nd.

KENTISH PLOVER.—Two immature specimens were killed on Breydon on the 24th, making a most unusual number in one season.

SHORE LARK.—Two on Yarmouth Denes, October 26th.

GOLDEN-CRESTED WREN.—A considerable number were observed about the Caistor Road, next Yarmouth, on the 22nd and 23rd.

TENGMALM'S OWL.—Certainly the rarest bird of the season, next to the Sabine's Gull, was an adult male of this species, secured by the keeper of the Cromer lighthouse, as it fluttered against the lantern on the night of October 30th. It came into the possession of Mr. J. H. Gurney, jun., who recorded its capture in 'The Zoologist.' This is the third specimen obtained in Norfolk. In 'The Field' of November 18th, another bird of this species was said to have been shot at Dartford.

NOVEMBER.

SPOTTED RAIL.—Again, this month, I heard of some eight or ten specimens shot in the Yarmouth neighbourhood, and four near Lowestoft. I have reason to believe it still nests on the margins of our wildest and most extensive Broad.

SCLAVONIAN GREBE.—An immature bird, near Yarmouth, on the 9th.

SHORE LARK.—On the 13th I received another live specimen from Yarmouth for my aviary, with Snow Buntings and Twites. It may be mentioned here, that on the 9th thousands of Snow Buntings and Shore Larks were observed, passing south, at Heligoland.

SNIPE DRUMMING IN WINTER.—Several of these birds were heard at Ranworth on the 8th, making their well-known sound, as in spring.

GREAT GREY SHRIKE.—A bird of this species was taken alive at Beeston, near Cromer, about the 15th.

LATE HOUSE MARTINS AND SWALLOWS.—One Martin seen, November 11th, at Overstrand, and two Swallows at Cromer on the 18th; and several House Martins were also seen at Cromer on December 5th.

DECEMBER.

WINTER ARRIVALS.—A large number of Snow Buntings and Twites (the latter unusually numerous this season) appeared at Yarmouth on the 14th of November; and it is interesting to note that Mr. Cordeaux, in 'The Zoologist,' remarks that, from that very date till the middle of December, "Snow Buntings frequented the stubble-fields on the Lincolnshire coast in flocks of thousands, feeding, with almost equal numbers of Greenfinches, flocks of Tree Sparrows, and some Linnets and Twites, on oats that had been shelled out by a high wind on August 26th." Mealy Redpolls appeared in the bird-dealers' shops in Norwich on the 5th, and were said to be plentiful. Siskins were also numerous about the same time, especially near the coast. The number of Wood Pigeons observed migrating near Yarmouth and Northrepps, late in November and beginning of December, was a feature of the season. Mr. G. Smith, of Yarmouth, informs me that they were seen on Caister Denes, on November 27th, passing by hundreds; and again at Beccles on the 28th. At Northrepps, large flocks were noticed on November 15th going south, and again on December 16th in about equal numbers. Fieldfares and Redwings were scarce everywhere, but a flock of the former appeared at Northrepps on the 1st of December.

ROBINS NESTING IN WINTER.—A pair of Robins built their nest and reared a brood of young ones at Merton Hall, their young being hatched on the 8th of this month.

LITTLE GULL.—Another immature specimen was shot from the beach at Yarmouth on December 1st.

WAXWING.—A few of these uncertain visitants appear to have arrived on the coast late in the month, as one was sent to a Norwich birdstuffer on the 28th; and a few days before two or three were seen near Holt, and one in the neighbourhood of Lamas. One or two were also seen at Burgh, near Yarmouth.

LESSER SPOTTED WOODPECKER.—A female was shot in a plantation, near Mr. Harmer's house at Cringleford, on the 16th.

RAPTORIAL MIGRANTS.—In January a Rough-legged Buzzard was shot at Filby on the 7th, and another at Hanworth, near Cromer, on the 14th; and on the 18th a Peregrine was seen close by at Gunton. On the 28th a live Short-eared Owl was sent me from Yarmouth; and on the 31st five were seen at Roughton Heath, near Cromer, and three on the Warren. Again on the 24th of February a Short-eared Owl was observed by a gamekeeper at Northrepps, flying round inside his garden, and dropping down every few minutes after mice. The same keeper, on the 6th of March, saw a Sparrowhawk chasing a Short-eared Owl. On the 7th of February a young Hen Harrier was shot at Flegg Burgh, and another at Hickling on the 14th; and a Marsh Harrier was seen at Ranworth on the 18th. A Peregrine Falcon was also seen at the same time and place; and a young bird was sent up to Norwich (no locality) early in the month, and a nearly adult bird from Gorleston on the 3rd. A Common Buzzard was killed at Letheringsett in February, and a Rough-legged Buzzard at Thornage on the 1st of March. Short-eared Owls appeared, singly, at Northrepps on March 26th and April 3rd, and a Buzzard on the 18th of April. An unusual number of Marsh Harriers were seen this spring in the Broad district, and one or two frequented the larger Broads throughout the season, but I have reason to believe they did not nest, as the Short-eared Owls undoubtedly did. An Osprey was seen at Potter Heigham on the 13th of June, but from that date, excepting some Hobbies' nests found in Foxley Wood by Mr. F. Norgate, I have no other raptorial notes till the month of September, which was remarkable for the abundance of Honey and Common Buzzards. The chief ornithological feature of the year was, undoubtedly, the considerable influx of these birds in September, along our whole line of coast and adjoining parts of Suffolk, simultaneously; the specimens seen or obtained, occurring between the 21st and 30th of the month. From my own notes, at the time, from Yarmouth and its neighbourhood, chiefly supplied to me by Mr. G. Smith, of the Priory, and from notes made by Mr. Gurney as to examples seen or killed in the Cromer district, I have made out the following list, which may give some little idea of the extent of the immigration; but I have had some difficulty in avoiding repetition in numbers, as birds recorded

from the coast appeared again, in many instances, in our bird-stuffers' shops:—

Honey Buzzards	.	.	.	.	.	.	21
Common Buzzards	.	.	.	.	.	.	10
Seen, not identified	.	.	.	.	.	.	4
							<hr/>
							35

Of these birds, reckoning both species, thirteen occurred at Yarmouth, or on the Broads adjoining, and at Fritton and Somerleyton, on the borders of Suffolk; eleven in the neighbourhood of Cromer and Northrepps; three inland, and one at Hunstanton, near Lynn; the only record I find from that part of the coast. Of five, localities not known. We have had no such visitation of Honey Buzzards since September, 1841, and the numbers then seen or procured fell short of the present record. With the exception of a Buzzard, seen inland, on the 21st, at Cranmer, near Fakenham, the first indication of this raptorial invasion was the appearance, on the morning of the 24th, of three Common Buzzards, three Sparrowhawks, and a Harrier, washed up dead on the beach at Yarmouth, as stated by Mr. Patterson in a letter to the 'Daily Press,' drowned, evidently, by some mischance on their way to our shores. On the 23rd a Honey Buzzard had been taken alive on the Drive at Yarmouth, and a Common Buzzard shot on the North Denes; but ten, at least, of the specimens included in my list were seen or obtained on the 24th, the rest between that date and the 31st. Two Honey Buzzards were also sent to Norwich on October 1st and 6th, localities not known. I could not ascertain that a single adult bird had appeared amongst the Honey Buzzards. Two young birds, which Mr. Gurney secured alive, were prettily mottled in the immature dress, but died in the spring of the following year. One large Hawk, supposed to be a Buzzard, which was seen soaring at Northrepps on the 27th, was being mobbed by two flocks of small birds, estimated at about two hundred. A Honey Buzzard, which was trapped at a wasps' nest at Southrepps, had dug out a hole big enough to get into, and which, after it was first disturbed, it was seen to enter seven or eight times. A good many Short-eared Owls also put in an appearance during this month, and some, I understood, late in August. On the 15th a Peregrine was seen at Lower Heigham, flying direct for the city. Several Marsh Harriers were killed

about Yarmouth on or about the 24th with the Buzzards; and a "blue-and-red Hawk," seen near the avenue at Northrepps on the same day, was probably an adult male Montagu's Harrier. On the 26th an adult female Peregrine was shot at Blakeney. On the 13th of October four large Hawks, possibly Buzzards, were seen at Northrepps, apparently fighting in the air; the last, apparently, of the invading host. On the 10th an Osprey was shot at Flitcham, a Peregrine and an immature Hobby somewhere in the county on the 8th, and an immature Marsh Harrier at Yarmouth on the 15th. Probably the first Merlin of the season was shot from Breydon Wall on the 7th of November; and a Barn Owl, caught by a boy in a fence at Scratby, on the coast, was no doubt a migrant; it was dark in tint and much spotted. The first Rough-legged Buzzard of this winter put in an appearance at Somerton on the 5th, and another was shot at Flegg Burgh, also near Yarmouth, on the 22nd, and one close by at Fritton, in Suffolk, on the 15th; and an adult female Hen Harrier at Rollesby on the 26th. The record of the year, raptorially, closed with the death of a fine young Sea Eagle (of course proclaimed as a Golden Eagle till satisfactorily identified), which was shot early in December, between Sedgeford and Holme-next-the-Sea, close to Hunstanton. One of these birds frequented for some days the park and lake at Kimberley in the autumn, but, thanks to the protection of the noble proprietor of the estate, remained unmolested till it voluntarily took its departure.

MIGRATORY WADERS.—The intense frost and deep snow-drifts from the middle to near the end of January were not favourable for waders on Breydon, or any other part of the coast. Even Dunlins were scarce, and a few Sanderlings, Knots, and Golden Plover, with an occasional Godwit or two, were about all that the gunners brought in; but during the terrific gale on our east coast on the 18th, swarms of Snipe and Dunlin, as well as wild-fowl of various kinds swept down the coast on their passage southward. A Purple Sandpiper was shot at Yarmouth on the 19th; and a Green Sandpiper was seen about the same date at Taverham, near Norwich. So soon as the frost began to break, by the first week in February, our markets were full of Dunlins, Knots, Redshanks, an Oystercatcher or two, and various wildfowl, all in wretched plight, and lots of Waterhens in a shocking state of emaciation, as one dealer remarked, "not worth picking up."

The Coots seeking the salt marshes suffered far less. Although in the hard weather scarcely as many Dunlin were shot on Breydon as have been killed occasionally at one discharge of a duck-gun, yet by the middle of February they appeared in large numbers, about two hundred in a flock, with some Ringed Plovers. Two Golden Plovers with partial black breasts, and a good flock of Redshanks were seen at Ranworth on the 18th of March. On the morning of the 2nd of April a flock of some two hundred Golden Plovers was seen at Castleacre, where large numbers had recently frequented the wheatfields, most of them assuming the black breast. Amongst the spring migrants on Breydon during the first fortnight in May were two Turnstones, one Black-tailed Godwit, and several lots of Bar-tailed Godwits, and on the 14th a few Grey Plover, assuming summer plumage, one Greenshank, and a few Red Knots. From the 20th to the end of the month the tide of migration set in, and Breydon had its full complement of Grey-and-Golden Plovers, Turnstones, Sanderlings, Pigmy Curlews, Oyster-catchers, two or three Kentish, and many Ringed Plovers, one Greenshank, Dunlins, &c. Dunlins were still numerous on the 1st of June, a Greenshank was shot on the 11th, and large flocks of Redshanks appeared at the same time, and three Dotterel (*morinellus*) were seen on the North Beach on the 15th. Though not included amongst Waders, I may also mention here, several Black Terns in May. Turnstones and Dunlins still frequented the "muds" up to the 23rd of June. The end of the "close time," August 1st, found Breydon again alive with Dunlins, Pigmy Curlews, Ring Plovers, Whimbrel Curlews, Redshanks, and Common Sandpipers (eighteen were killed at one shot), of all of which species specimens were killed in the first week of the month. One Turnstone on the 20th, first Knot 23rd, first Grey Plover 24th, two Knots on the 25th, and a Sanderling on the 27th. Common, Arctic, and Lesser Terns were very plentiful at this time, both on Breydon and the adjoining rivers. The above Waders, with Oyster-catchers and Bar-tailed Godwits, the latter scarce, were met with throughout August and chief part of September. Amongst the rarer species may be noted a Spotted Redshank, shot on the 25th of August, and two others seen about that date; also three Greenshanks. Little Stints must have been extraordinarily plentiful, as between the 1st and 17th of September I have notes of thirty-four specimens shot on Breydon or close

by, and two Temminck's Stints. Seven Sanderlings were killed between the 7th and 11th, and a solitary Woodcock appeared near Yarmouth on the 8th, and a Green Sandpiper on the 4th. Again on the 17th, five Bar-tailed Godwits were shot out of a small flock on Breydon, and two Greenshanks on the 22nd: these, and the Kentish Plovers, separately mentioned, exhaust my autumnal list. On the 2nd of November another Spotted Redshank was shot on Breydon South Wall, in winter plumage, a very red (for time of year) Bar-tailed Godwit with but one leg on the 5th, and the same day a slightly red Knot. On the 2nd and 4th very large flocks of Lapwings were seen going west at Northrepps. A Wood Sandpiper was killed on the 5th somewhere in the neighbourhood, and on the 19th a Purple Sandpiper on the beach.

DUCKS AND DIVERS. — The commencement of 1881 was anything but a gunner's season, as the intense severity of the frost when it did come, and the deep snow which, drifted by the gales, filled roads and railway cuttings in many parts of the county, drove fowl and other birds, migrants and residents alike, to the southward for a time. My notes, therefore, under this head are but few. Sheldrakes seemed to have had a bad time of it, and from the localities from which specimens were sent to our bird-stuffers, I fear most of those that were shot were reared on our coast. A Scaup Duck was killed on the 11th as high up the River Yare as Thorpe Gardens; and on the 21st a male was picked up, exhausted and nearly buried in the snow, on the top of the Gas-house Hill, Norwich. Two or three good old males occurred at Yarmouth about the same time, and a fine old male Golden-eye at Hickling on the 27th. Strange to say, when the weather was most severe, towards the end of the month I saw a male Shoveller, anything but a "hard-weather" fowl, in the Norwich fishmarket. In February more old Scaups were met with on Breydon, and a female Velvet Scoter was also shot at Yarmouth on the 3rd. Pintails, Common Scoters, and other fowl appeared about the 10th and 11th, and by the 27th Duck and Mallard, Wigeon and Pochard were plentiful, and three mature Golden-eyes were shot at Somerton on the 26th. A few immature Mergansers and one or two Black-throated Divers were killed during the frost, but I saw none in good plumage. At Ranworth, on the 18th of March, Mr. J. H. Gurney, jun., found a strange

mixture of winter and summer fowl on the Broad, a pair of Golden-eyes and fifteen Tufted Ducks appearing with a male Shoveller and a Garganey, ten Common Teal, twenty Duck and Mallard, and a flock of Wigeon, the latter all male birds but two. Shovellers were seen on Breydon, again, as early as the 1st of August, and several lots of this species appeared there on the 20th, with a few Sheldrakes. I have several notes of Gadwalls killed, both on the coast and inland, in September and October, but as these birds breed in such large numbers upon the meres of the Merton and Wretham estates, and in many localities in West Norfolk along the valley of the Nar, and disperse in autumn, it is impossible now to distinguish foreign arrivals.* An immature Long-tailed Duck, a female, was shot near Yarmouth on the 22nd of October, an early date for this species; and a few immature Red-throated Divers were shot both in October and November. In December a female Golden-eye on Breydon, with a few Pintail Ducks and flocks of Scoters at sea complete my notes.

THE LAND AND FRESHWATER MOLLUSCA IN THE VICINITY OF OXFORD.

BY S. SPENCER PEARCE, B.A.

THIS list, the result of conchological rambles during the last three years, is not to be considered as exhaustive, but rather as supplementary to Mr. T. F. Whiteaves' excellent paper "On the Land and Freshwater Mollusca inhabiting the neighbourhood of Oxford," published in 1857, by the Ashmolean Society. Though my rambles have rarely extended for more than six or seven miles around Oxford, this district has yielded more than an average number of species, which I have no doubt might be considerably augmented by further research, for the geological features of the neighbourhood are extremely favourable for molluscan life, owing to the extensive exposure of some of the oolitic limestones.

* Sir R. P. Gallwey, in a most interesting article in 'The Field' of May 12th, 1883, on "Fish and Fowl in West Norfolk," as observed on Lord Walsingham's estate at Merton, states that the number of Gadwalls on one private water alone was computed at fourteen or fifteen hundred.

I have given Mr. Whiteaves' localities in addition to my own, with the view of making this list more complete.

AQUATIC MOLLUSCA.

Order LAMELLIBRANCHIATA.

Fam. I. SPHÆRIIDÆ.

Sphærium corneum, Linn.—Plentiful and generally distributed; especially abundant in all stagnant waters.

Var. *flavescens*.—Occasionally met with.

S. rivicola, Leach.—Abundant in the Isis and Cherwell Rivers and their tributary streams; found sometimes in company with *S. corneum*.

S. lacustre, Müller.—I have not met with this species; but Mr. Whiteaves records it under the specific name "*caligulata*" as "found abundant in a railway lake at Wolvercot, chiefly at the end which is choked up with a profuse growth of *Ceratophyllum demersum*. It occurs also in peaty pools near Headington Wick Copse." This latter locality will, I think, no longer hold good, for the pools have ceased to exist, owing to drainage, but the lake at Wolvercot still seems a likely place.

S. ovale, Férussac.—A single specimen dead, but in good condition, with the valves united, from the canal near Wolvercot.

Pisidium amnicum, Müller.—Abundant; in parts of the Isis and Cherwell, but more especially in their tributary streams.

P. fontinale, Draparnaud.—Common and generally diffused.

Var. *pulchella*.—Not uncommon in gravelly ditches (Whit.).

Var. *Henslowiana*.—In several places in the River Isis, especially near Binsey (Whit.).

P. pusillum, Gmelin.—Not very plentiful. Mr. Whiteaves took it in a ditch near Watereaton, and I have it from near Marston and near Headington from weedy ditches.

Var. *obtusalis*.—In a stream near Botley (Whit.).

P. nitidum, Jenyns.—Rare; in a half-dried ditch near Hincksey Ferry I met with a few specimens, and Mr. Whiteaves took two specimens from a ditch near Summertown communicating with the Cherwell.

Fam. II. UNIONIDÆ.

Unio tumidus, Philipsson.—Rather plentiful in the canal, and also taken in the Isis and Cherwell. In 1854, says Mr. Whiteaves,

there was a great mortality of this (?) species, occasioned by drought, and by rats devouring them; the banks of the Cherwell were lined with their shells. Mr. Whiteaves seems, however, to have confused the present species with *pictorum*, and all his notices under "*tumidus*" apply with equal force to the species *pictorum*, which is the commoner of the two forms. *Unio pictorum* is not mentioned in the list, though it appears in the collection in the University Museum.

U. pictorum, Linn.—Very abundant, in the Isis and Cherwell, and their communicating streams; also in the canal.

Var. *laticor.*—Abundant in the canal.

Anodonta cygnea, Linn.—Plentiful in all the larger pieces of water, the finest forms coming from stagnant lakes. From Mr. Whiteaves' list I cite the following varieties, though not now to be found in the collection:—

"Var. *rostrata*.—In river.

"Var. *cellensis*.—In lake at Wolvercot.

"Var. *intermedia*.—Lake near South Hinksey."

A. anatina, Linn.—Plentiful. Mr. Whiteaves considers it commoner than the preceding.

Fam. III. DREISSENIDÆ.

Dreissena polymorpha, Pallas.—Plentiful in the canal, especially about the locks.

Order PECTINIBRANCHIATA.

Fam. I. NERITIDÆ.

Neritina fluviatilis, Linn.—Rather plentiful in parts of the Isis and confluent streams, where the bottom is stony and gravelly.

Fam. II. PALUDINIDÆ.

Paludina contecta, Millet.—Very abundant in ditches around Oxford. Found with the next species, and like it always covered with confervoid growth.

P. vivipara, Linn.—Not so abundant as the preceding. I have taken it in the Isis near the "Gut," in the Cherwell, and in the canal.

Bythinia tentaculata, Linn.—Very abundant; specimens from the canal are smaller, more fragile, and of a pale horn-colour.

B. Leachii, Sheppard.—Local and rather scarce. Found in the railway lake near Wolvercot, and according to Mr. Whiteaves, “on mud on banks of Isis, opposite the island in Portmeadow, on the towing-path side.”

Fam. III. VALVATIDÆ.

Valvata piscinalis, Müller.—Abundant in places, though not generally diffused; in the canal, ditches running into the Cherwell, near Summertown Ferry.

V. cristata, Müller.—Not plentiful about Oxford, though more widely diffused than *piscinalis*. I have taken it near Ferry Hincksey and Portmeadow. Mr. Whiteaves gives as localities “Yarnton, near Summertown, and near Watereaton.”

Order PULMONOBRANCHIATA.

Fam. I. LIMNÆIDÆ.

Planorbis nitidus, Müller.—Rather rare; in a ditch near Ferry Hincksey. Mr. Whiteaves took it in the lake at Wolvercot.

P. nautilus, Linn.—Rather rare; amongst rushes along the edges of the canal between Wolvercot and Oxford. The shells are fragile, with the costæ but moderately pronounced. This is an addition to the vicinity of Oxford.

P. albus, Müller.—Sparingly, though generally distributed; on water-lily leaves in the Isis just above Godstow Bridge; canal-banks near Wolvercot. Mr. Whiteaves' localities are “the ditch round Christchurch Meadow, near Yarnton (this locality I can confirm), near Watereaton, and near Summertown. *P. glaber*, the near ally of this species, so far as I know, has not yet been found near Oxford.

P. spirorbis, Müller.—Plentiful, in ditches, &c.

P. vortex, Linn.—Rather more plentiful than the last-named species, with which it is generally found.

P. carinatus, Müller.—Local, though generally plentiful where found; lake at Wolvercot, ditches near Cherwell River, and near the ferry at North Hincksey.

P. marginatus, Drap.—Very abundant; in almost every piece of water.

P. corneus, Linn.—Plentiful in most of the ditches in the

marshes around the city; sometimes very large and fine, though generally the shell is disfigured by an incrustation of mud.

P. contortus, Linn.—Not plentiful; in stagnant ditches generally. I have it from near Medley, Sandford-on-Isis, Wolvercot, and near Marston.

Physa hypnorum, Linn.—Locally abundant; in grassy pools and ditches between North and South Hinckseys, also near Sandford Lasher, Watereaton, near Summertown, and from between the Cherwell and Marston village. I can confirm also Mr. Whiteaves' locality, "in pools on one side (the west side) of the Abingdon road."

P. fontinalis, Linn.—Plentiful and generally distributed.

Limnæa peregra, Müller.—Very common everywhere.

Var. *ovata*.—Common, of large size, in the canal.

Var. *acuminata*.—In a ditch communicating with the Cherwell.

L. auricularia, Linn.—Plentiful, though perhaps somewhat restricted in range. Very fine in canal above Wolvercot, also at North Hincksey and near Iffley. In March, 1881, when the rivers and streams were very low, many of this species were left high and dry in various parts, and in nearly every shell the occupant was being devoured by one or more large water leeches.

L. stagnalis, Linn.—Plentifully and generally distributed.

Var. *fragilis*.—Occurs in the canal.

L. palustris, Müller.—Plentifully and generally distributed; the specimens in the Museum Collection are rather larger than usual.

L. truncatula, Müller.—Plentiful on muddy banks above the water's edge along the rivers, streams, and canal.

Ancylus lacustris, Linn.—Plentiful on the larger water-plants in slow-flowing and stagnant water. On the approach of winter this mollusk crawls down below the surface of the mud, between the sheathing leaves of Iris, Sparganium, and similar plants, for the purpose of hibernation.

A. fluviatilis, Müller.—On and under stones in the River Evenlode: this tributary falls into the Isis just below Eynsham Bridge.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Field Vole suckled by a House Mouse, and *vice versâ*.—Among the numerous instances which have been recorded from time to time of young animals having been reared by females of a totally different species, or even order, I do not remember having met with a similar case to the following, the most noteworthy point here being, I think, the fact that a fresh-caught wild animal should not only continue when in confinement to suckle her own young (instead of eating them), but should even take in and give nourishment to a stranger, very much older and quite different in colour and general appearance from her own offspring:—On the 23rd of last May I caught in a Mole's run a large female Field Vole, *Arvicola agrestis*, with five young ones of about three or four days old, as near as I could judge, and placed the whole family, nest and all, in a cage, except one young one, which I put with a tame female of *Mus musculus*, also suckling young, hers being fourteen days old, and just beginning to see—consequently very much older than the young Field Voles. At the same time I put one of the young House Mice (a white one) with the old Field Vole and her family. Both mothers took kindly to their foster-children and suckled them with their own progeny. The young white Mouse placed with the Field Vole thrived well, and was soon able to feed on bread, &c., but the four young Field Voles, though they grew fast and in time were able to leave the nest, were suddenly devoured by their mother,—I fancy from my having to remove them all to a larger cage,—yet, strange as it may appear, she never molested the young white Mouse, which continued to live with her after she had devoured her young ones. In the case of the other changeling (the young Field Vole nursed by a House Mouse), though it did not grow nearly so fast as the rest of the litter, which remained with their mother, it continued to suck, and I think might have been reared had it not unfortunately fallen from the nest (placed at the top of the cage) to the floor below, where I found it on the 29th nearly dead with cold, and beyond recovery. The young Field Voles reared by their mother began to see on the 28th, probably about the ninth day. *Apropos* of a correspondence which recently appeared in 'The Field' respecting nests found in Moles' runs and elsewhere, partly composed of the fur of *Arvicola agrestis*, I may mention that I found a nest this spring on the 18th April in a Mole's run, evidently tenanted by Field Voles, which was constructed of grass combined with the fur of those animals, among which I found three of their incisor teeth. A few days afterwards I came upon a similar nest in the side of a ditch, the materials of which were grass and rabbits' fur; the skeleton of the rabbit from which the fur

had doubtless been taken being partially worked up into the substance of the nest: yet the nests of the Short-tailed Field Mice found in summer when the grass is cut, rarely if ever (at least according to my experience) contain fur. It seems not unlikely that the first spring litters requiring a warmer material for their bed than grass the parents have recourse to fur (turning departed friends and relations to account), or if these are not at the time available, utilising the fur of any dead animals they may chance to fall in with, this material being discarded as the season advances. The caged female mentioned above worked some cotton-wool into her nest,—otherwise composed of hay,—biting off the latter and mixing the two substances so intimately together as to form a sort of felt.—G. T. ROPE (Blaxhall, Suffolk).

BIRDS.

Erroneous Report of Demoiselle Crane in Somersetshire.—At the request of my friend Mr. Howard Saunders I made some enquiries as to the reported occurrence of this bird near Wincanton, in the county of Somerset, a notice of which appeared in 'The Zoologist' for 1876 (p. 4928), copied from 'Science Gossip' of the same year (p. 66). Through the Curator of our Museum I have received two letters on the subject. One, dated Horwood, near Wincanton, June 6th, 1883, signed by Mr. W. Galpin, as follows:—"The supposed Numidian Crane [!] was found by Mr. Henry Dyke, son of the late Mr. John Dyke, of Myland. He described it to Mr. William Herridge, now of Ainger Farm, Cucklington, who consulted 'Cassell's Natural History,' and sent the note to 'Science Gossip.' I have written to Mr. Dyke, asking whether the bird was preserved, by whom else it was seen, and other particulars, and herewith enclose his reply. The persons whom he names as having also inspected it are both dead." The other letter, dated May 3rd, 1883, is from Mr. H. Dyke:—"In reply to your letter respecting the bird, I do not remember very much about it. We kept it several days, and then it was thrown away. Father and Mr. Jukes both said they had never seen such a bird before. It was some kind of an Heron, but had such a very long tuft on its breast. I cannot say more about it, as I do not remember." I think it worth while to send you the result of this investigation, for the occurrence of *Grus virgo* in Somerset still stands in both 'The Zoologist' and 'Science Gossip,' and might lead to difficulties in future, especially as the record has been perpetuated in 'The Ibis List of British Birds,' and in the last number of 'Yarrell' received this morning, though in neither of these works is the bird considered fairly entitled to a place in the British list. I think, however, that all ornithologists will now agree with me that this reported occurrence of *Grus virgo* must be considered "not proven." It is a pity that records of the occurrence of rare birds should be made on such very unsatisfactory evidence. I have not thought it worth while to

write to Mr. Herridge, who recorded it in 'Science Gossip,' as it appears that he himself never saw the bird.—CECIL SMITH (Lydeard House, Bishop's Lydeard).

On a peculiar Habit of the Starling.—It is now many years ago that I first used to find now and then, during its breeding season, a Starling's egg on my lawn. These eggs were always quite fresh and uninjured; and I concluded that—as we know is the case at times with domestic fowls—they were accidentally dropped by the birds as they were running about and feeding. (See a note in 'Yarrell,' 4th ed., ii., p. 234.) On one occasion, however,—and that is now also some years ago,—I happened to see a Starling fly from among some trees where these birds constantly breed, and as it crossed the lawn it dropped something which just before I could see it holding in its beak; this, to my surprise, was an egg, and perfectly fresh. I have seen a repetition of this several times since; the latest instance occurred about the middle of June, and on picking up this egg in order to blow out its contents, and prepare it for my little boy's collection, I was still more surprised to find that it contained a young bird just ready to hatch. It seems difficult to assign a reason for the birds bringing out and abandoning their eggs at any time, but still more so just as the egg is about to hatch! No doubt there is some good reason for it, and possibly some of the correspondents of 'The Zoologist' may be able to tell us the reason; but for myself I cannot at present account for it at all, nor indeed do I remember ever to have heard the fact mentioned or seen it noticed.—O. P. CAMBRIDGE (Bloxworth Rectory, Blandford).

Food of the Starling.—Last month, on some repairs being done to the roof of one of the farm-buildings, a Starling's nest with young was disclosed, near which were collected a number of wireworms—and wireworms only. A farm labourer drew my attention to them, and expressed his surprise, as he was a sharer in the popular delusions about the food of the Starling.—E. F. BECHER (Southwell, Notts).

Supposed nestling Grey Plover from the Orkneys.—Responding to a request from my friend the Rev. H. A. Macpherson, and to your editorial note, I recently examined the nestling Grey Plover referred to at p. 179. The Orkney birds in the Hope Collection at Oxford were, as Mr. Rowell tells me, all collected by the Rev. F. W. Hope himself, and preserved by his man. On their arrival at the Museum they were, with the other birds in the collection, removed from the cases in which they were then mounted and placed on their present stands. The Orkney specimens were in a separate lot, and for this reason it is probable that their localities are correct. Turning to the specimen in question, I may state that it *has* a back toe, and a very well-developed one, too: this bird would be perhaps a fortnight old, possibly older. This, of course, at once proves that it is not the Golden

Plover. I cannot help thinking, however, that it is nothing more than a nestling Lapwing. Unfortunately I do not remember ever to have seen a Lapwing at this particular age, although I am familiar with them when younger. It seems to me, as far as I can judge from the description in Mr. Dresser's 'Birds of Europe,' which I read with the specimen before me, that the dusky crescent-shaped mark on the breast, the *brown* mottling on the back and wings, and the total absence of all signs of the *golden* or *white* mottling, on which Mr. Dresser lays such stress, point to *Vanellus* rather than to *Squatarola*. I should be very glad of any information on the point, and also if any ornithologists familiar with the Grey Plover in down would examine the bird when they chance to be in Oxford. I may add that it now stands, labelled "Grey Plover, young, Orkneys—Hope," in one of the cases devoted to the collection of British birds.—OLIVER V. APLIN (Great Bointon, near Banbury, Oxon).

Magpie attacking young Game Birds.—On the 7th July last, in a wood at Northrepps, a Magpie was observed attacking a young Pheasant about the size of a Thrush, which, after two or three assaults, it penned up against the side of a bush, when a hen Pheasant, doubtless the mother of the intended victim, appeared upon the scene and drove off the Magpie, the young Pheasant at the same time making its escape, apparently uninjured, being able to run away. As an illustration of the Magpie's voracity this incident may perhaps be worth recording.—J. H. GURNEY (Northrepps Hall, Norwich).

Golden Oriole in Essex.—On the 22nd May last William Cornell, my father's farm-bailiff at Lindsell Hall, near Dunmow, shot either a female or immature Golden Oriole, as it sat on an ash-tree in the orchard adjoining the house. It had been heard about some days before being shot; in fact, the congregation in the church, which adjoins the house, on the previous Sunday could distinctly hear its note, which was described as being a loud and musical chatter, like that of some bird which had been taught to talk. Unfortunately the sex was not ascertained. Its occurrence at this time of the year made me think that it must be breeding; but I am assured that neither before nor since it was shot has another bird of the kind been seen about, and I have searched unsuccessfully for a nest. It is an undoubtedly wild bird, bearing on its plumage no sign of captivity, and may therefore be regarded as an accidental straggler from the Continent. The last occurrences of this bird in Essex which I am aware of were at a similar time of year—namely, on the 25th May, 1850,—when one of a pair, probably going to nest, was shot in a garden at Leyton, as recorded by Mr. H. Barclay (Zool. p. 2851), and on the 8th May, 1862, when a male in breeding plumage was shot at Tiptree, as recorded by Dr. C. R. Bree (Zool. p. 8032). I may just mention that, so far as rare birds are concerned, Lindsell Hall

seems a rather favoured spot. In 1878 Cornell shot a Sulphur-crested Cockatoo, which must have come some distance. A year or so later he saw a great bird in the orchard which has remained in his thoughts ever since; and only last year a bird, which, from his description, I cannot make out to be anything else than a Roller, came and stopped several days. He described it as being much like a Jay in general appearance, but bright blue all over, and with such a loud melodious, rattling whistle that he and his wife used to hear it whilst in-doors. About the year 1871 a former bailiff shot a very fine Little Auk.—ROBT. M. CHRISTY (Chignal St. James, near Chelmsford).

Bold Attack by a Partridge.—The other day, at Karlstad, as I was walking at the edge of a pine wood, a cock Partridge, *Perdix rubra*, attracted my attention, running backwards and forwards about ten yards in the wood, calling to and being answered by the hen, which was apparently about fifty yards off in some young wood. I stood still and watched the old cock bird, who was evidently in a great state of excitement. He flew towards me and alighted under a very small fir about two feet from me; he then ran a little way into the wood. I walked in the direction of where the hen was calling. Before I had gone a dozen yards the cock twice flew at me, and I had to ward him off with my butterfly-net. The hen presently joined him, and they ran off into the wood together, but not very far, evidently wishing to see if I had any evil intentions towards their family. I have no doubt that the cock wished to divert my attention whilst the hen was drawing off her young ones to a place of safety, though I did not see any of them. I have frequently disturbed Partridges with young ones, but I have never before experienced such a bold and determined attack on the part of either of the old birds.—E. F. BECHER (Southwell, Notts).

Birds fattened for the Table.—Are Teal (*Querquedula crecca*) and Quail (*Coturnix communis*) kept and fattened for the table in confinement in England? In Upper India both these birds are kept for a considerable time after they cease to be procurable by the fowler, and furnish a very welcome addition to the Anglo-Indians' dietary resources at a time when variety in food is, if not necessary, at all events greatly appreciated. Teal and Quail are hawked about the stations by native fowlers when the birds are most numerous in the open country. The former are put in a little pond well thatched over, and provided with side fencing to prevent escape and the intrusion of destructive creatures as the Mongoose; the latter are kept in a cool dark house or shed, and both are plentifully supplied with millet or other grains of small size. The birds get very fat, but must be eaten up before the rainy season has set in.—C. DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

[Quail are certainly fattened for the table in England, and during the summer months hundreds may be seen in Leadenhall Market in cages with

canvas tops, as well as at many of the West End poulterers' shops. They are fattened chiefly on millet and hemp-seed.—ED.]

The Goldfinch in Oxfordshire.—It is perhaps worth recording that upwards of four hundred Goldfinches were taken by four birdcatchers in the neighbourhood of Oxford during September and the first half of October last year. Two men, who worked together, sent to London twenty dozen Goldfinches of both sexes, while two others caught seven dozen and six dozen on their own estimates. By the end of November very few Goldfinches are left in the neighbourhood of Oxford, as they migrate in that month; they again become tolerably plentiful in March. A few winter with us, and I have seen fifteen in a "charm" during a protracted frost. About Danbury Mr. O. V. Alpin notices them chiefly on the approach of winter. Though I have paid more attention to this species than to any other, I have met with no varieties except a few of those mentioned by Mr. Blake-Knox. White-throated birds are considered rare in Oxon, though I have seen males and females of various degrees. Some years ago a pied "grey-pate" was netted near Garsington; an old bird in black plumage was also taken by a Hinksey fowler, from whose mate I procured, in Sept., 1877, a newly-captured finch, with the breast tinged with golden yellow; the crimson band across the occiput also occurs in Oxon, but, so far as my observations go, it occurs only in cage-moulted males.—H. A. MACPHERSON.

Grey Crow nesting in Warwickshire.—I am informed by my friend Mr. H. D. Crompton, of Edgbaston, Birmingham, that a pair of Grey Crows nested last spring at Sutton Coldfield Park, near Birmingham. He remarked that the nest was very large. Instances of the Grey Crow breeding so far north are rare, and I think therefore the instance referred to is worthy of being noted in 'The Zoologist.'—J. WHITAKER (Rainworth Lodge, near Mansfield, Notts).

The Grey Crow in Co. Cork.—According to Messrs. Hart and Palmer (pp. 225, 296) the Grey Crow, *Corvus cornix*, is considered to be of rare occurrence in the county of Dublin and on the west coast of Ireland. In this neighbourhood the bird is by no means uncommon. I have seen as many as five or six old Grey Crows together in my lawn, and they are frequently met with along the sea-coast here. I came across fifteen or sixteen nests this year in the limited area of the Myross peninsula (three miles and a half in length by two in breadth), and found the first eggs as early as the 15th March—a date far in advance of that given in Yarrell's statement (4th edition), "It is generally the end of April or the beginning of May before the nest is prepared." Underneath the nest of a Grey Crow on a Scotch fir, *Pinus sylvestris*, I found the body of a dead Black Crow stuck on the branches about twenty feet from the ground!—CHARLES DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

Nutcracker in North Devon.—I have to report the occurrence of the Nutcracker, *Nucifraga caryocatactes*, which I observed in Huntshaw Woods, near Bideford, North Devon, on July 14th. A bird of this species was observed two years previously at Instow, near Bideford, by Mr. C. F. Hinchliff, and he recorded it in his list of birds which was published in 'The Field' as occurring within seven miles of Westward Ho. Yarrell also mentions it as having been observed in North Devon in 1808. When I saw the bird in question it was perched on a withered larch-stump, where it remained for about two minutes. I was quite close enough to observe distinctly its plumage, and am perfectly certain that I am not mistaken as to its species.—M. H. ROTHERAM (Westward Ho).

Hoopoe at the Farne Islands.—When upon a visit to these islands a short time ago I saw a Hoopoe, *Upupa epops*, at the birdstuffer's at North Sunderland, which had been captured at the Longstone Lighthouse, having injured itself, no doubt, against the lantern. I was unable to obtain the exact date, but it was in the early part of June.—R. W. CHASE (Edgbaston, Birmingham).

Hybrids amongst Birds.—Continuing the remarks on hybrids among birds, I should like to say that, like higher authorities, I have little faith in Blackbird and Thrush hybrids. Though I have always taken an enthusiastic interest in small birds, I have never yet seen a hybrid of this kind, and I have met with only one practical man who told me that he had known these two species to interbreed. My impression is that the wild-bred hybrids which are occasionally obtained are the offspring of accidental crosses between birds which had previously chosen wild mates of their own kind. To give an instance in point, I have been assured by Mr. Traviss, the keeper of the Western Aviary at the Zoological Gardens, Regent's Park, that he took a nest of young Goldfinches from the immediate neighbourhood of a Greenfinch's nest. In the Goldfinch's brood he found a single hybrid between *Carduelis elegans* and *Ligurinus chloris*, which he reared and kept for a number of years; and which must have resembled a tame-bred hybrid of the same kind which I happened to possess at the time I discussed the point with him. Of course there are instances of a contrary description; those related by Macgillivray will occur to everyone. But I venture to think that they are the exception, and not the rule, at least, among Finches. It is a common thing—I know of two cases, as I write, in our parish—for Canary-breeders to have broods composed partly of pure Canaries and partly of Goldfinch-Canary mules, the birds not being kept apart. In confinement, amorous males often try to pair with strange mates. One mule-breeder, at my instance, matched a male Greenfinch with a female Bullfinch, which had bred with a Goldfinch the year before, and she laid a number of eggs; none, however, proved fertile. Again, a male Hawfinch of my own rearing,

fell desperately in love with a Red-crested Brazilian Cardinal, and made every endeavour to induce her to nidificate. Bullfinches and Yellow-hammers often mate, too, with Canaries, though the eggs never hatch. In June last a male Siskin and female Greenfinch reared a hybrid of their own, in Carlisle, until it was a week old; the hen bird then left it to go to nest again; the nestling died, and was eaten by a Tawny Owl before I could examine it. There is also in Carlisle a fine hybrid between the Lesser Redpoll male and Bullfinch female, reared in confinement in 1882.—HUGH A. MACPHERSON (3, St. James Road, Carlisle).

Red-backed Shrike in Lincolnshire.—As Mr. Seebohm, in his work on ‘British Birds and their Eggs,’ says of the Red-backed Shrike, “Curiously enough, it does not appear to have yet been noticed in Lincolnshire,” I think this should at once be set at rest. I have known it to be a regular summer visitor to *the southern part* of that county for a good many years, breeding in the tall hedgerows, sometimes only about two feet from the ground, and at others as many as eight or ten. I have seen some nests of this species beautifully and compactly made, and lined with fine grasses and horsehair,—frequently without hair,—and others as loosely made and lined with feathers. The situation and state of the weather, I believe, have a great deal to do with this; for when the weather has been cold and the situation bleak, the nest has been built very low in the hedge and firmly and compactly made; then, again, the weather having changed from cold to very hot, the same pair of birds (the first nest having been taken) have built a nest at the top of the hedge, at an elevation of ten feet, quite as loose and as flimsy. True, the fact of the first nest having been taken may have had something to do with it; yet I have seen other instances, without any knowledge of a previous nest having been taken. A male bird is now in my possession which was obtained there in 1873, and it was known as a summer visitor before that.—J. CULLINGFORD (University Museum, Durham).

[Mr. Cordeaux, who enters it as “rare” in his ‘Birds of the Humber District,’ states that he has never seen it himself in Lincolnshire. But then it should be remembered that he resides in the north of this large county, while Mr. Cullingford’s observations were made in the south.—ED.]

‘The Ibis’ List of British Birds.—In order to make the recently issued ‘Ibis’ List of British Birds of as much practical value as possible, may I direct attention to its use as a “check list,” which will be serviceable to ornithologists in enabling them to carry out an improved system of labelling and arranging eggs and mounted specimens of British birds? As the present list is not numbered, it should be understood that those species included in brackets must be omitted, or the mistakes which will arise will make confusion worse confounded. If the British Ornithologists’ Union Committee would also publish a list for labelling, printed in bolder

type than that usually met with, it would materially assist those who have the management of public collections of birds, and make those collections far more useful by securing uniformity of arrangement and nomenclature, the want of which is so much felt.—R. J. HOWARD (Fern Bank, Blackburn).

Ornithological Notes from Ireland.—I saw a beautiful specimen of the Squacco Heron among the collection of stuffed birds at Castlefreke, Co. Cork; unfortunately the bird bears no history, except "shot by my keeper," but I searched out a former keeper, and found out from him that it was killed about 1870. Last autumn I noticed very peculiar behaviour in a Rook. I was driving through the Co. Galway, on September 26th, and saw a Rook sitting on a fence a few yards from the road with a twig about six inches long in his beak; presently he flew across the road directly before my horse's head, with the twig in his claws, and as I watched he put down his beak to take the twig out of his claws, and hovered for some seconds waving it in the air, then he changed it to his claws again by putting them up towards his beak and drooping his head until the stick came within reach of his feet. This he did several times, hovering over the field all the time, as if it were a gymnastic performance and he was calling for the admiration of his companions. About this time last year (June, 1882) I dissected a couple of Black-headed Gulls, and in the stomach of one of them I found eight leeches and eight mollusks (*Limnæa palustris*). While exploring the handsome ruins of Moyne Abbey, in Co. Mayo, on the 7th August last, I found a Swallow's nest in a curious situation. It was in a hole in the wall, about eight feet from the ground, and the entrance was partially built up with mud; it contained eggs slightly incubated. My friend Mr. Robert Warren told me that he found a Swallow's nest in a similar situation in Moyne Abbey. About the same time I discovered another nest of the same species under a low arch beneath the road, placed on a stone jutting out from the bank, and within six inches of the water. Apropos of Mr. H. C. Hart's note (p. 257), I may state that last summer, as I was searching among the Mayo mountains for another inland breeding-place of Cormorants, I was misled by seeing numbers of these birds flying inland every evening in a particular direction, and finding the place and seeing several of the birds perched on the trees on a small island in a little lake about three miles from Ballina, I thought my search was successful, but was disappointed to find that they were only roosting there. When at school at Portora, Co. Fermanagh, I recollect being deceived, as Mr. Hart was, about the Cormorants' eggs, but was more fortunate with those of the Greylag.—J. FFOLLIOTT DARLING (Clonakitty).

The Blue-headed Yellow Wagtail in Co. Cork.—I saw three Blue-headed Yellow Wagtails, *Motacilla flava*, Linn., on July 18th, walking on the roof of this house. One has been about the place, off and on, up to

July 20th. I am sure the birds belong to the Blue-headed species, for I had a very close view of them, scarcely fifteen feet from me, and I could easily make out their plumage.—CHARLES DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

[This Wagtail is a rare visitor to the South of Ireland.—ED.]

White-winged Black Tern in Norfolk.—A specimen of this rare Tern, *Hydrochelidon leucoptera*, was forwarded to me, in the flesh, by Mr. G. Smith, The Priory, Yarmouth, which was shot on one of the Broads on June 10th. The bird proved a male, and is in full adult summer plumage, except one or two feathers in the tail, which are still grey. I believe another was seen at the same time.—R. W. CHASE (Edgbaston, Birmingham).

American Bittern in Pembrokeshire.—I write a line to record the occurrence of the American Bittern at St. David's, in Pembrokeshire, in October, 1872. I saw it in May last in the possession of Mr. Greenway, who shot it, but who, until he showed it to me, had always been doubtful as to its identity, though he had recorded it with doubt at the time in 'Land and Water.'—CECIL SMITH (Lydeard House, Bishop's Lydeard).

REPTILES.

Food of the Common Ringed Snake.—During the last ten years I have kept many Common Snakes. I used formerly to offer them toads as food; these were always refused, till one day a fine Snake ate a small toad. The Snake died during the following week; its stomach bore a dark green mark; I opened it, and found it to contain a dark green mass, which had discoloured the intestines at that part, and had even affected the skin. This Snake was the only one I ever had which would eat the Great Water Newt, *Triton cristatus*, though all my other Common Snakes have readily eaten the Palmate and Smooth Newts. I believe the Great Water Newt, like the Toad, secretes an acrid matter in its skin, which naturally causes them to be rejected as food by creatures which would otherwise prey upon them.—C. WITCHELL (Stroud).

FISHES.

Large Sturgeon in the Thames.—There has been recently on view at the International Fisheries Exhibition a large Sturgeon, which was captured in the Thames off Erith early in the month of July last. Some workmen who observed it floating down the river in an almost lifeless condition, succeeded in dragging it ashore. It was found to measure six feet three inches in length, and weighed 117 pounds. The cause of death was believed to be suffocation from the sewage which runs into the river at Crossness.—J. E. HARTING.

Oblong Sunfish in Cornwall.—A specimen of the Oblong Sunfish, *Orthogoriscus truncatus*, was taken in Looe Harbour on June 23rd. It was seen swimming on the surface of the water, having come in with the evening tide. Two fishermen at once followed it in a boat and captured it, in what is known here as a "keep-net." It was quickly brought to me, and was alive when I first saw it. Immediately before death the colours were most brilliant, the back being of a dark purple, gradually decreasing in intensity to the belly, which was white, with golden reflections, the sides marked with green lines on the purple; towards the tail there were several irregular white spots, about the size of a threepenny-piece; the dorsal, anal and pectoral fins were of a pale lead-colour, but the caudal-fin was most brilliant, being of a bright burnished silver, with prismatic reflections, the rays tinged with purple, whilst between the rays there were keyhole-shaped markings, edged with gold, forming such a brilliant combination of colours as is not easily imagined. But, alas! all this brilliancy entirely vanished a few minutes after the death of the fish, when it assumed the dull blue colour of the figure in Couch's 'British Fishes,' which is exceedingly good, but might have been a few shades darker. The following measurements were taken in my presence:—Length from snout to end of caudal-fin, 25 in.; depth of body close behind the pectoral fin, 15 in.; distance between tips of dorsal and anal fin, 22 in.; from base to base of the same fins, 9 in., the space between being filled up by the caudal fin; from snout to eye, 4 in.; pectoral fins, 6 in.; dorsal and anal fins, $7\frac{1}{2}$ in.—STEPHEN CLOGG (Looe).

[It is remarkable that on the very day on which this specimen was captured in Looe Harbour (June 23rd) there appeared, in the Natural-History columns of 'The Field,' a report of anothea, which was taken on the coast of Pembrokeshire, at Saundersfoot, on June 21st. This latter specimen, which was forwarded by the captor to the Editor of 'The Field,' has been presented to the British Museum, where it may now be seen. It would appear to be about the same size as the Looe specimen, for it is of exactly the same length (25 inches), and from its weight must be regarded as immature. The Common Sunfish, *Orthogoriscus mola*, attains to a very large size, sometimes measuring seven or eight feet, and weighing as many hundredweights; it has a rough granulated skin, the Oblong Sunfish, *O. truncatus*, being distinguished by its smooth tessellated skin. The latter (according to Dr. Günther, 'Study of Fishes,' p. 690) is one of the scarcest fishes in collections. The specimens recently captured, however, are not the first which have been captured on the British coast; others have been recorded to have been taken at intervals at Swansea, in the Moray Firth, and in Orkney.—ED.]

MOLLUSCA.

The claims of *Helix pomatia* as a British Mollusk.—The following interesting correspondence on this subject has recently appeared in the columns of 'Nature':—

"It is a mistake to suppose that the Romans, when they possessed and inhabited Great Britain, brought this snail with them to indulge their luxurious tastes. In all probability it was not even known to them, because another species (*H. lucorum*, Müller), takes its place in Central Italy. *H. pomatia* has not been found at Wroxeter, or York, or in any other part of England or Wales where the Romans built cities, or had important military stations. Among the *débris* of an extensive Roman villa discovered in Northamptonshire, in which the shells of cockles, oysters, mussels, and whelks abounded, not one of *Helix pomatia* occurred, although at Woodford, a few miles distant, that species is plentiful in a living state."—J. GWYN JEFFREYS, *Nature*, April 19.

"I agree with Mr. Gwyn Jeffreys ('*Nature*,' p. 511) in considering *Helix pomatia* as indigenous in this country, and not introduced by the Romans. I never found or heard of a single specimen, either living or dead shell, being met with in the neighbourhood of Bath, which the Romans occupied for more than 400 years, though it is found in one or two localities in the adjoining county of Gloucester, from whence we have specimens in the museum of the Bath Literary Institution."—L. BLOMEFIELD (Bath), *Nature*, April 26.

"As *Helix pomatia* appears to be very partial in its distribution in this country, it may be worth while to record the fact that I have met with it on and near the chalk downs in the neighbourhood of Epsom, and on the chalk downs above the village of Hambledon, in South Bucks; while Mr. J. E. Harting, in his '*Rambles in Search of Shells*' (p. 71), states that it is not uncommon on the chalk hills in the vicinity of Reigate and Dorking, Mickleham, Boxhill, and in parts of Kent. Forbes and Hanley, in their '*History of British Mollusca*,' say "it is entirely confined to the southern counties, living chiefly on cretaceous soils"; but we learn from Mr. Gwyn Jeffreys ('*Nature*,' vol. xxvii., p. 511) that it is abundant at Woodford, in Northamptonshire; and from Mr. Blomefield ('*Nature*,' vol. xxvii., p. 553) that it occurs sparingly in Gloucestershire, neither of these counties being cretaceous. With regard to its possible introduction into this country by the Romans, we gather from Venables' trustworthy work on the Isle of Wight that *Helix pomatia* has not been met with in the island, although it was occupied—and probably permanently—by that people; but *H. scalaris*, which, according to some malacologists, is a monstrous form of this species, has been found there. Its absence from the Isle of Wight may be said to be somewhat remarkable, seeing that the species extends in the south at least as far as the borders of West Sussex, and that the other British chalk-frequenting *Helicidæ*, *H. caperata*, *H. ericetorum*, and *H. virgata*, are very abundant in the island. Either of two causes may account for its absence from this locality:—it may be a geologically recent importation from its original (?) centre in France, and has not yet succeeded in navigating the

salt waters of the Solent; or its exceptionally large size may have proved its destruction in its exposed favourite haunts. The latter supposition is the more probable one, as it would account for its general rarity, and at the same time help to explain the prevalence in the same exposed haunts of the smaller *Helicida*."—PAUL HENRY STOKOE (Wycombe Court, Bucks), *Nature*, May 3.

"Only a few more lines to say, in consequence of the communication of Mr. Stokoe in your last number (p. 6), that he will find the Mollusca in their geological relations treated in the introduction to my work on 'British Conchology,' vol. i., p. cix. The distribution of *H. pomatia* in this country and on the Continent is noticed in pp. 177 and 178 of that volume, and in the supplement to the fifth volume."—J. GWYN JEFFREYS (1, The Terrace, Kensington), *Nature*, May 10.

"I have found this snail freely in the hedge-bottoms of Hertfordshire lanes, where the soil was a dark alluvial mould, certainly not cretaceous. I suspect that even in its known localities it is very local."—HENRY CECIL (Bregner, Bournemouth), *Nature*, May 10.

"In two of the localities mentioned for this snail—Dorking, Surrey, and Woodford, Northamptonshire—there seems some reason to suspect it to be a modern introduction. From 1849 to 1852 I lived within two miles of Woodford, and often found the shells in a small wood known as Woodford Shrubbery. It was commonly said in the neighbourhood at that time that the snails were brought from abroad by the gentleman—I think General Arbuthnot—who had formed the Shrubbery some thirty years before that date. I also found, many years ago, shells of the same species about the foot of Box Hill, near Dorking, and was told by a former resident in that neighbourhood that the snails were brought from Italy by Mr. Hope, of Deepdene, who was well known in the early part of this century as a writer on the mediæval architecture of Italy. I give the statements for what they may be worth."—J. C. (Loughton), *Nature*, May 10.

"Although this species is decidedly local in this country, yet it is interesting to note that the counties in which it has been recorded are contiguous to one another. Its course of distribution appears to pass through Kent, Sussex, Surrey, Hants, Wilts, Gloucestershire, Berks, Oxon, Bucks, Herts, and Northamptonshire; and this seems to support Mr. Stokoe in his suggestion ('Nature,' vol. xxviii. p. 6) that it may be a geologically recent importation from France (to the northern portion of which it is confined in that country). In Murray's 'Handbook to Surrey,' p. 70, *Helix pomatia* is stated to abound at Tyting Farm, near Guildford, 'said to have been introduced from Italy' by an Earl of Arundel; and Bevan's 'Guide to Surrey,' p. 111, mentions the same locality as the 'habitat of the edible snail, imported from Italy,' &c. I visited this spot in September, 1880, in quest of *H. pomatia*, and mentioned my object to

a farm labourer, who speedily produced three specimens from under a log of wood, but told me that they were not at all plentiful there, as the soil was *sandy* and not *chalky*, and he said I must look for them on the neighbouring chalk downs, whence his master, the farmer, procured his for the purpose of adopting the diet which, when ill, he had been advised to try. Be *H. pomatia* indigenous or not, there is no doubt its presence in England has been assisted by importations, for Mr. Lovell Reeve mentions its being introduced from Italy by an English nobleman in the vicinity of Box Hill and Reigate (*cf.* also Gray's 'Turton,' ed. 1840, p. 35). The *Helix scalaris*, referred to in Venables' work on the Isle of Wight, is cited in that book as a monstrosity of *H. aspersa*; and Moquin Tandon's figure of the variety *scalaris* is of the usual coloration of that species. The name, however, was originally betowed by Müller on a variety of *H. pomatia* (Lamk., 'Anim. sans vert.' second edition, vol. viii. p. 32), and is figured as such by Draparnaud; but Venables' reference seems to apply to a scalariform variety of *H. aspersa* observed by Dr. Gray near Ventnor."—W. C. ATKINSON (Streatham), *Nature*, May 24.

VERMES.

Subcutaneous Worms in a Shrike.—On the 15th July I was skinning a Red backed Shrike, *Lanius collurio*, about three hours after it was killed, and was surprised to find between the bone of the skull and the skin three translucent worms, measuring about two inches, one inch, and three-quarters of an inch in length, and as thick as a pin. The shortest showed signs of life, and wriggled one extremity considerably; the others did not move perceptibly. A similar instance was recorded, I believe, a few years ago, but I have not that number of 'The Zoologist' by me to refer to. I am not aware of any explanation being given, but record this, hoping that some one may explain more fully than has already been done the reason of this occurrence. The Red-backed Shrike is not common in Glamorganshire, but I caught two young ones just fledged on the same day as the above, and saw one or two more about the same place.—EDWARD J. GIBBINS (The Graig, Neath, Glamorgan).

[The worms in question are doubtless some species of *Filaria*, probably *F. attenuata*. At p. 309 of 'The Zoologist' for 1881 will be found a communication from Mr. Herbert Langton on subcutaneous worms in a Falcon, to which is appended an interesting note from Dr. Spencer Cobbold, who points out that *Filaria* are remarkably abundant in the muscles and soft parts, not only of the rapacious, but also of the passerine and some other birds, and specifies some of the genera in which they have been found. Mr. Langton has quite recently forwarded to us some more of these subcutaneous worms, which he found in a young Hornbill (*Buceros*), on which we hope to report later.—ED.]

INSECTS.

Habits of the Mason Wasp.—Mr. Romanes, in his 'Animal Intelligence,' states that the Mason Wasp builds its nest of clay and attaches it to the branch of a tree. I have watched three successive generations of these wasps. All the nests (attached to a stone or brick wall) were made of fine gravel or sand, taken from a path near the nest. The Wasp always returned to the same spot for the material of her nest, even when she might have saved herself some labour by choosing a nearer spot from which to convey it. The original nest, built in 1880, is as strong as ever, and needed very little repairing this year. There are several other nests, colonies from the first one, and all are built of fine gravel or sand.—C. WITCHELL (Stroud).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

June 21, 1883.—Prof. P. M. DUNCAN, F.R.S., Vice-President, in the chair.

The following gentlemen were balloted for and elected Fellows of the Society:—Messrs. Edmund J. Baillie, John Borland, Kenneth M'Kean, Edward C. Malan, and Henry A. A. Nicholls.

A paper "On the hard parts of the Fungidæ," part 2, *Laphoserinæ*, was read by Prof. Duncan.

A communication was read from Mr. H. G. Doran, "On the Malleus of *Rhytina stelleri*," based on a specimen obtained in the voyage of the 'Vega,' and exhibited in the Swedish Department of the International Fisheries Exhibition, under the charge of Prof. Smitt, of Stockholm. The author concludes that this auditory ossicle in the extinct Northern Sea Cow (*Rhytina*) is larger than in the Manatee (*Manatus*), and therefore it is the largest and bulkiest malleus to be found in the whole section of the animal kingdom where such a bone exists. In the character of its body it resembles that of the Manatee, rather than that of the Dugong (*H. alicore*), while in the manubrium it differs in *Rhytina* from the other *Sirenia*, and is far more generalized.

"On the Testis of *Limulis*" formed a communication from Mr. W. B. S. Benham. He describes the structures in question, noting the apparent isolation of many of the spermatid sacs, and the probability that they are not diverticula of the spermatid duct, but secondarily acquire connection therewith, the two structures being independently developed. He remarks that in no crustacean do the ducts of the generative glands form a network, whereas in the King Crab, as in the Scorpion and other Arachnids, they do.

There followed the 20th part of a paper "On the Mollusca of H.M.S. Challenger," by the Rev. R. Boog Watson. This contains a continued descriptive account of the family *Bullidæ*, dealing with the genera *Atys* and *Scaphander*, along with the group *Aplysiidæ*, genus *Dolabrifera*.—J. MURIE.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 6, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

George Coverdale, Esq. (24, Fleming Road, Lorrimore Square, S.E.), was balloted for and elected a Member of the Society.

The President invited Prof. Westwood, Honorary Life-President, to take the chair, which he accordingly did, and read the following address:—

"GENTLEMEN,—I hardly know how sufficiently to express to you my thanks for the great honour you have conferred on me in unanimously electing me as the Honorary Life-President of the Entomological Society of London, an office hitherto in England held only by the venerable William Kirby; whilst in France Latreille was the only entomologist on whom the Honorary Presidentship of the Société Entomologique de France was conferred. Before the names of these "heroes scientiæ" I must hide my diminished head, as nothing which I have ever written can be put in competition with the 'Monographia Apum Angliæ' of Kirby, or the 'Genera Crustaceorum et insectorum' of Latreille. I, however, may without egotism lay claim to two characteristics which have governed me through my long entomological career, namely (1st) an earnest zeal to further the science of Entomology amongst both naturalists and the public by the investigation of difficult materials, and the diffusion of sound knowledge in a more or less popular manner; and (2nd) a thorough perception of the truth of the adage, "ars longa, vita brevis," and a determination to adopt the equally useful adage, "nulla dies sine linea," by constantly employing myself, either in accumulating knowledge of what was being done by my fellow-workers in the Science (to whom I trust I have always done ample justice), or in adding, either by my pen or pencil, original materials to the fast-growing stores of knowledge with which from day to day we have for the last half-century been inundated, and which require, for utilisation, a constant system of assimilation. As a specimen of what may be done in the way of daily registration of observations, I beg leave to exhibit to you the diary of the late John Curtis, which (together with all his unpublished manuscript notes and drawings) has come into my possession from his widow; and, as I consider this to be the best system of daily record of observations with which I have ever been acquainted, I think it quite worthy of the attention of the younger members of the Society. It is a volume of nearly 400 pages, one of which is devoted to each day throughout the year, and in which, of course, all the

current observations of the day are recorded. This being continued from year to year, an easy comparison is afforded at a single glance of the entomological peculiarities at any given day or season: whilst an alphabetical index at the end of the volume to the observations contained therein (which feature, however, is wanting in Mr. Curtis's volume) would be found of great service, as showing the periods of the different phases of life of any given species.

The state of the Science of Entomology, and the means by which it may now most successfully be investigated, are so totally at variance with what they were when about the year 1820 I first commenced the study, that I can but feel that the young student may, and almost necessarily must be, deterred from taking up the pursuit otherwise than in a very cursory and unsatisfactory, or in a very limited, manner. At the period to which I have referred, the system of Linnæus was generally regarded as the *ne plus ultra* of the Science. A few of what we should now regard as quite children's books, such as Pinnock's 'Catechism of Entomology,' 'Anecdotes of Remarkable Insects,' and others of the same class, were, with the exception of Kirby and Spence's 'Introduction,' our only guides. Samouelle's 'Compendium' was commenced and half occupied with the Linnean Arrangement, when the latter half of the volume was, by the advice of Dr. Leach, extended to the then modern system of classification and study which had not long before been introduced in France by Latreille. It was consequently not difficult in those days to obtain a general idea of the insect-world; and entomologists (with the exception of a few "Aurelians," as the students of Lepidoptera were then termed) formed general collections of British insects of all orders, the result of which is well shown in the works of Curtis and Stephens. By degrees, however, the vast number of additions to the British fauna, and the unnumbered hosts of exotic species with which we have been and still are inundated, have gradually rendered it almost necessary for the lover of the Science to restrict himself to the insects of a single order, or even to those of a single family of insects.

In this manner, indeed, most important additions have been made to the stores of entomological science. The labours of Sir John Lubbock on the habits of bees, wasps, and ants; the beautiful works on the Tineidæ by Mr. Stainton; the monographs on the *Carabidæ* by Dejean; the hymenopterous works of the late Frederick Smith; and the dipterous works of the late Professor Loew and of the Baron Osten-Sacken, are all instances of the vast progress made in different directions by continuous specialised labour. Of course to render such labours most efficient it is absolutely necessary that each subject should be thoroughly investigated, and nothing left for future inquiry; the entire organisation of an insect, in all its stages, must be studied; the opinions of previous writers must be carefully criticised, but not slavishly adopted; and thus works like Lyonnet's wonderful

volumes on the *Cossus*, or Victor Audouin's on the *Pyralis* of the vine; and monographs like Kirby's on the British bees, Mr. M'Lachlan's on the Trichoptera, Mr. Eaton's on the *Ephemeridæ*, and Mr. Pickard-Cambridge's on the spiders, will be added to our stores of general knowledge.

When we consider the present state of our knowledge of the vast number of species of insects compared with that of all the other tribes of animals, the young entomologist may well feel appalled at the difficulties which are opened to his view. Thus, whilst Professor Huxley estimates the number of all the known species of animals (exclusive of the Arthropoda) at 50,000, we find nearly 80,000 species of beetles alone catalogued in Harold and Gemminger's list. Such a number of species unfortunately necessitates the creation of vast numbers of new genera, with the still greater multiplication of subgenera or groups established, often recklessly on insufficient or ill-considered characters, all which is unfortunately forming an almost insuperable barrier against the real progress of the science. How this barrier is to be overcome seems to me to be a matter deserving very serious consideration; for, whilst it is necessary in the special investigation of any given group to separate discordant species and regard them as separate genera or subgenera, the requirement of the more general student is opposed to such numerous and often arbitrary divisions which it is impossible for him to study, but of which it is useful for him to have some general idea. An instance of this kind is afforded in the last part of the 'Proceedings' of the Linnean Society, where Mr. W. F. Kirby has established a number of new genera founded upon different thick-thighed species of the older genus *Chalcis*. The species are for the most part South American, and unique in the British Museum Collection, and for more general purposes may well be known and spoken of under the old generic name of *Chalcis*. Fifty years ago, M. Laporte (Comte de Castelnau) partially endeavoured to obviate the difficulty by employing generic names which had evident reference to the principal genus in the group; thus we had genera or subgenera *Lucidota*, *Luciola*, *Lucio*, and *Lucernuta* established in the family *Lampyridæ* (Ann. Soc. Ent. France, vol. ii., 1833).

The same difficulty exists in the elevation of local forms or geographical subspecies to the rank of distinct species without a due consideration of the primitive forms from which they have probably sprung. The consideration of the nature of the differences which distinguish these various forms and the possible cause of their origin deserve the most attentive consideration of the student, although the evidences of their origin may be as difficult to investigate as those on which the varieties of the human race or those of our domestic animals have originated, of which also amongst plants the genera *Rosa*, *Ranunculus*, and *Salix* afford equally difficult examples. In this point of view the recent memoir of Dr. Hagen on the variations of *Papilio Machaon* is of great interest, although the difficulty of the subject

has already been manifested by the opposition to Dr. Hagen's views of so excellent a lepidopterist as Mr. Edwards.

I should be unwilling in this view of the subject to deny the intimate connection of this question with the Darwinian theory of development, but I would earnestly discourage my young hearers from following this attractive theory too far, as it appears to me that it can only end in vague speculations impossible of proof, especially whilst there still remain so many interesting and important points which are capable of solution by a careful and long-continued course of investigation.

In addition to the systematic labours of the monographer and student of the modern classification and description of species, the life-history researches of such writers as DeGeer and Réaumur; the special morphological memoirs, such as those of Lyonnet on the *Cossus*, or Straus Durckheim on the Cockchaffer, or that of Mr. P. H. Goose on the clasping organs of male butterflies just published in the 'Transactions' of the Linnean Society, we must now add another special branch of the science, that of Economic Entomology,—that is, the investigation and publication of the natural history of such species of insects as are either beneficial or obnoxious to mankind. The labours of John Curtis, as exhibited in his fine work 'Farm Insects,' must here be referred to, and those of Miss Eleanor Ormerod, whose unwearied proceedings are manifested in her 'Annual Reports' and in her most useful 'Manual of Injurious Insects.' In America this branch of the subject has been carried much further than in England, the appointment of State Entomologists by several of the leading States of the Great Republic having led to the publication of several very valuable series of annual reports on obnoxious insects by Messrs. Riley, Comstock, and others. The attention of our own Government has at length been directed to the importance of this branch of the subject, and I believe I am at liberty to mention that an important step will be shortly carried out for bringing the subject in an official and satisfactory manner before the general public.

As I have elsewhere ventured to remark, the investigation of the precise nature of the variations in any given species in a state of nature and the causes which have led to such variations are of far higher importance either than the establishment of new and independent species, or the study of analogous modifications produced like those of pigeons under a state of domestication.

There is still another field of investigation opened to the entomologist by the recent improvements in microscopes, especially in the movable apparatus, by which lenses of different powers are brought to act upon objects by means of a simple revolving disc upon which they are fixed. A still more important apparatus has been invented for marking the most delicate sections of the various organs of insects; and here I may suggest that it is much to be wished that the attention of some of our entomologists was

directed to the internal anatomy of insects, which, by the aid of the last-mentioned apparatus, is shown out in a wonderful manner, and is much facilitated, an example of which may be noticed in Sir John Lubbock's plates of the internal anatomy of the head of the ant, and especially in Mr. George Dimmock's inaugural memoir on the parts of the mouths of the gnat and other dipterous insects.

It is with great pleasure that I have witnessed the gradual development of the entomological collections of the British Museum, now, I venture to say, the finest in the world. Let us hope that their removal from Bloomsbury to their magnificent new home at South Kensington will be safely effected, and that their new domicile on the ground floor of that establishment will be less disastrous than that which has attended the location of the fine collection of insects in the New Museum of Geneva, where, from the misplaced position of the entomological laboratory, mould to a terrible extent has assailed the collections, the very valuable one of Mr. Melly having, however, escaped by being placed in an upper room.

In conclusion, I cannot too strongly insist on the necessity of investigating the correlation between the various structures of insects and their corresponding habits; believing as I do that every variation of structure has resulted from a preconceived design, and that nothing has been left to blind chance, or to the power of external forms in developing previously non-existent structures into a permanent specialized condition."

Mr. J. W. Slater exhibited a large case containing numerous specimens of Lepidoptera from Zululand.

Prof. Westwood made some detailed remarks on some of the specimens, especially on the Rhopalocera and *Bombycidae*, noticing various rare and beautiful species of *Acraea* and a pair of the rare *Bombyx Oubie*, Guér., figured in Lefebvre's 'Voyage en Abyssinie' (Ins. pl. xii. figs. 1, 2), but hitherto otherwise unknown to him.

Mr. W. F. Kirby exhibited an object found in a nest of *Formica nigra* in Ayrshire by Mr. P. Cameron. Prof. Westwood suggested that it was the pupa, or rather the indurated skin, of some syrphideous insect. Baron Osten-Sacken, who was present as a visitor, said it was certainly the pupa of one of the *Syrphidae*, probably of *Aphritis aureopubescens*, Latr.

Mr. E. Saunders exhibited a specimen of *Lebia turcica*, Fabr., recently captured by Mr. W. H. Bennett in a clearing in a wood at Guestling, near Hastings. Mr. Saunders remarked that this species had been omitted from the two recently-published British catalogues. Mr. M'Lachlan enquired whether any member present had heard of other recently-reported captures of this insect. Rev. H. S. Gorham said there had been no other recent capture, he fully believed in the authenticity of this one. The species was figured and by Curtis, and he saw no reason to think the specimen now exhibited was imported. *Lebia crux-minor* was almost unique until taken in some numbers

in a marshy spot at Holme Bush, near Brighton, by Dr. Power; it had not since been found there, although he and Mr. Lewis had often hunted the exact spot. Mr. Gorham believed the recent fine weather had contributed to the occurrence of this interesting species, and that if the fine season lasted he expected many other rare species to be captured.

Mr. E. A. Fitch exhibited specimens of *Ixodes* sp.? taken from sheep at Maldon; this was with reference to some recent remarks by the Rev. L. Blomefield, in which he says, "I can remember no instance of an *Ixodes* found on sheep, though I would not undertake to say they never occur on that animal" ('Nature,' vol. xxvii. p. 553; April 12, 1883). Mr. Fitch believed the occurrence of *Ixodes* on sheep to be very rare in the Eastern Counties; from the evidence of a gang of sheep-shearers of large experience he could only gather that they had met with these true ticks on three or four occasions during the last fifty years; it appeared to be otherwise further north. Mr. Fitch then read a letter from Mr. Elliott Lockhart, of Braxholme, Hawick, N.B., giving some very full information of tick-attacks on sheep, and making numerous inquiries about the life-history of the *Ixodes*, which Mr. Fitch hoped some members of the Society would be able to supply. This matter had a very practical importance, as the *Ixodes* were supposed to be the cause or necessary agents in producing that fatal malady "louping-ill" or "trembling" amongst sheep. Extracts from the Reports of the Louping-ill Committee of the Teviotdale Farmers' Club were read, and Prof. Williams' reports, printed in the 'Transactions of the Highland and Agricultural Society' (1882, pp. 176—201), and Mégnin's 'Les Parasites,' p. 377, were referred to. The *Ixodes* appeared to occur commonly as far south as the hills of Cumberland and Northumberland, and wherever the ticks occurred louping-ill was prevalent. Mr. Todrick notices the presence of *Ixodes* and a disease with similar symptoms to louping-ill on the hill-farms of Devon, and Prof. Rutherford notes their existence in Cornwall. The northern ticks had been determined by Mr. F. Moore and the Rev. O. P. Cambridge to be *Ixodes erinaceus*, Aud., and *I. marginatus*, Leach. Mégnin says *I. reduvius*, DeG., is the species most commonly found on sheep, but mentions five other species which had occurred.

Miss E. A. Ormerod, Mr. McLachlan, Lord Walsingham, Mr. Distant, and Prof. Westwood made some remarks in connection with the above.

Mr. Frank Cheshire, who was present as a visitor, made some observations on section-cutting in the probosces of honey-feeding insects, as referred to by Prof. Westwood in his address.

Mr. H. W. Bates read the "Supplement to the Geodephagous Coleoptera of Japan, chiefly from the collection of Mr. George Lewis, made during his second visit from February, 1880, to September, 1881."

Mr. R. Trimen communicated "Descriptions of twelve new species of South-African Lepidoptera Rhopalocera."—E. A. FITCH, *Hon. Secretary*.

Z.-D.

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THE NEW REPTILE HOUSE AT THE ZOOLOGICAL GARDENS.

SINCE our last number appeared, the new Reptile House, which has been for some months in course of construction in the Zoological Gardens, has been opened to the public, and forms a notable addition to the many fine buildings which now adorn the grounds of the Society.

Visitors to the Zoological Gardens have long been aware of the inadequate accommodation available for the collection of Reptiles and Amphibians, which, too numerous to be displayed in the old Snake House, have had to be located some in the Insectarium, some in other parts of the Gardens, while a large number, of course, remained of necessity in their old quarters.

The Council of the Zoological Society having become fully convinced of the necessity for a new Reptile House, must have had no easy task to decide upon the form and fittings of a building in which so many special requirements had to be carefully considered, and particularly the necessity for maintaining in each of the cages the exact temperature suited to the occupants. All difficulties, however, appear to have been effectually overcome, and the Society is now in possession of a new building, which, while presenting a handsome exterior, is admirably adapted internally for the purpose for which it has been designed.

It is built of red brick, with copings and windows of the fine tawny scorch-stone from Corse Hall, which, during the last few years, has been used a good deal in red-brick architecture, and

with the colour of which it harmonises admirably. The edifice is about 120 ft. long by 60 ft. broad, and has a vestibule at the south front measuring 35 ft. by 14 ft. It is of one storey only, with a fine stone coping, on the top of which a balustrade runs all round the building. The windows, which for the sake of light and warmth face the south, are nine in number; and the roof, which is of double span from back to front, with iron girders and ties, has, for the same reason, each southern slope glazed, and each northern slope slated. The two roof-lights have thus a superficial area of 72 ft. by 6 ft. The walls are 21 ft. in height, exclusive of the balustrading above, while the roofs of the pavilions rise to 30 ft., and are surmounted with finials about 4 ft. higher.

Interiorly the wall-cages, wide and lofty, extend round three sides of the building, and in the centre of the floor is an oval tank about 25 ft. long for the Crocodiles and Alligators, with two smaller ones for Turtles and Terrapins.

The wall-cages, twenty-eight in number, are faced with plate-glass permanently fixed, so that the particular temperature maintained in each is not felt by the spectator, who is enabled to observe the activity of the reptiles under conditions favourable and natural to them, without being inconvenienced by an oppressive atmosphere. Moreover, a proper elevation is given to the tanks in the cages of the aquatic or semi-aquatic species, and these being made of glass, instead of zinc as heretofore, the movements of the creatures in the water can be well observed.

The heating of the cages and tanks is effected by means of hot-water pipes, the precise temperature in each case being regulated by the number and dimensions of the pipes used, as well as by an adjustment of their valves; the hot water being supplied by two of Weeks's tubular iron boilers sunk below the level of the ground in the rear of the building.

All round the interior of the Reptile House at the back of the wall-cages is an unseen passage for the keepers, to enable them to cleanse the cages properly, feed the occupants, and fill their baths for them, the access to the cages being by means of sliding doors.

The wall-cages extend round three sides of the building, the fourth side having a good entrance, with windows on either hand. As we enter the building and turn to the left, passing a few

window-cases containing Lizards, we come first to the poisonous Snakes, all of which, in addition to the English and scientific names, have on the front of their cages an ominous black label bearing the word "poisonous"; for there are no external characters by which the poisonous species may be distinguished from those which are not so.

It will give some idea of the nature and extent of the collection if we give a list of the species which are now on view. Taking the cages in order from the left, they are arranged as follows:—

1. The Hamadryad or Snake-eating Snake, *Ophiophagus bungarus*. India.
2. The Indian Cobra, *Naia tripudians*.
3. The Puff Adder, *Vipera arietans*. Cape of Good Hope.
4. The Indian Cobra. Another example.
5. The Water Viper, *Cenchris piscivora*. North America.
6. The Bushmaster, or "Surucucu," *Lachesis mutus*. Brazil.
7. The Carpet Viper, *Echis carinata*. India.
- „ The Cerastes Viper, *Vipera cerastes*. Egypt.
8. The Alligator Terrapin, *Chelydra serpentina*. North America.*
9. The Yellow Snake, *Chilobothrus inornatus*. Jamaica.
- „ The Australian Carpet Snake, *Morelia variegata*. Queensland.
- „ The West African Python, *Python sebae*.
- „ The Tree Boa, *Corallus hortulanus*. South America.
10. Three West African Pythons, *Python sebae*.
11. The Anaconda, *Eunectes murinus*. South America.
12. Four Madagascar Boas, *Pelophilus madagascariensis*.
13. The Reticulated Python, *Python reticulatus*. Malacca.
14. Another example of the same species.
15. Four Common Boas, *Boa constrictor*. South America.
16. The Two-streaked Python, *Python bivittatus*. China.
17. The Indian Python, *Python molurus*.
- „ The Indian Rat Snake, *Ptyas mucosa*.
18. Two Indian Pythons, recently purchased.
19. Matamata Terrapin, *Chelys matamata*. Amazons.
20. The Indian River Snake, *Tropidonotus quincunciatus*. India.
21. The Neck-marked Snake, *Geophyas collaris*. Brazil.
22. The Striped Snake, *Tropidonotus sirtalis*. North America.
- „ The Common Ringed Snake, *T. natrix*. Europe.

* These Terrapins are carnivorous, and are fed about every other day on small pieces of raw meat.

23. The Lacertine Snake, *Cælopeltis lacertina*. Southern Europe.
24. The South American Rat Snake, *Spilotes variabilis*. Brazil.
25. Robben Island Snake, *Coronella phocorum*. Robben Island, S. Africa.
26. The Four-rayed Snake, *Elaphis quater-radiatis*. Southern Europe.
27. The Indian Eryx, *Eryx johni*.
 - „ The Conical Worm Snake, *Gongylophis conicus*. India.
 - „ The Indian-crowned Snake, *Zamenis diadema*.
 - „ The Spot-bellied Snake, *Zamenis ventrimaculatus*. Arabia.
 - „ The Glass Snake, *Pseudopus pallasii*. Dalmatia.
28. The Ocellated Lizard, *Lacerta ocellata*. Southern Europe.

In the window-cases we find—

1. The Smooth Snake, *Coronella lævis*, which of late years has been frequently met with in the South of England, and is probably much commoner than is generally supposed.
2. The Comb Lizard, from Mexico.
3. Skinks, from the Cape de Verd Islands and Australia.
4. The Heloderm, a poisonous Lizard from Mexico.
- 5, 6 and 7. The Derbian Zonure, a singular Spiny Lizard from S. Africa.

In the large centre tank may be seen the Mississippi Alligator; in the smaller tank to the right of the door on entering are kept various species of Tortoises and Terrapins, and in the left-hand tank will be found the Long-nosed Crocodile of West Africa, the Nilotic Crocodile, and the Sharp-nosed Crocodile of Central America and Jamaica.

The new Reptile House thus contains a really fine collection of Reptiles, Saurians, and Chelonians, many of great value, and most of which have only been procured with much trouble and expense. Some of them, as the Reticulated Python from Malacca, the Two-streaked Python from China, and the South-American Rat Snake, are really very beautiful creatures; and, after the first feeling of abhorrence which they inspire has passed away, one cannot but admire their singularly handsome appearance, and the elegance of all their movements.

It was an interesting sight to witness the transfer of all these creatures from their old quarters to their new abode, and one that will not readily be forgotten by those who had the privilege of being present on the occasion.

The first specimen moved was the large Mississippi Alligator, which measures about nine feet, and probably weighs not much

less than a couple of hundred pounds. Having regard to the dangerous use which the creature can make of its teeth and tail, a moderate blow from the latter sufficing to knock a man's legs from under him very speedily, it was necessary to exercise great caution in moving him. Moreover, the animal's weight made it no easy matter to carry it, even when firmly secured. Having been drawn up to the sides of the cage by means of a lasso round the neck, a second noose was slipped round the hinder quarters and the jaws bound together; when, in spite of all resistance, the huge creature was carried off in stout sacking and deposited in the new tank, where it was then released from bondage.

Even more difficult to move, from its much greater length and superior weight (about two hundredweight), was the huge South American boa, the Anaconda, *Eunectes murinus*. After a good deal of trouble it was induced to enter a box-trap in its cage in the old snake-house, from which it was transferred into an enormous bag, which was then tied up and carried triumphantly to the new Reptile House. But on being placed in one of the largest of the new cages, it proved almost as hard to get the creature out of the bag as it was to get it in, and, as may be supposed, it required something more than an ordinary shake to eject a writhing, wriggling mass weighing two hundredweight from a sack of extraordinary dimensions in which, apparently, it preferred to remain concealed.

In a similar manner the great Python, *Python reticulatus*, was transported to his new abode, in which he soon displayed himself to great advantage by uncoiling and extending himself to his entire length of twenty-five feet, giving the spectators an excellent view of a really magnificent creature.

The smaller snakes were of course much more readily transported when once caught, but great caution, naturally, had to be exercised in dealing with the poisonous species. The *modus operandi* was to drive them into boxes with sliding doors, which were carried bodily to the new cages, and the slides then withdrawn by means of a long iron rod.

In this way all were at length safely removed, and now appear to be quite at home in their new quarters. The fine roomy cages in which they can now move about with more freedom, climbing the tree-trunks which are provided for them, enable the spectators to obtain a much better view of them than

was formerly possible, and to judge very much better of their real proportions. The allied species are also more favourably placed for comparison, and it may thus be confidently expected that visitors to the Zoological Gardens, who, as a rule, know very little about Reptiles, will, with the facilities now afforded them, soon become much better instructed.

The Council of the Zoological Society may well be congratulated on the completion of this much needed addition to the Gardens, which, architecturally, as well as from an educational point of view, appears admirably suited to the purpose for which it has been designed.

ORNITHOLOGICAL NOTES FROM SKYE.

BY THE REV. HUGH A. MACPHERSON.

HAVING spent a month in Skye last spring, as I did in 1882 (see Zool. 1882, p. 418), I venture again to offer my rough jottings to your readers. In justice to the fauna of Skye, it is right to say that I had even less time to examine it than last year, owing to the presence of the Crofters' Commission, and many other demands on my time.

Of the Thrush tribe the only representative was the Song Thrush, young examples of which flew from the nest at Greshornish on May 8th, with us in Glendale a few days later. Like the Eigg Thrushes, the Skye birds often sing on a roof in the gloaming. I did not see either a Blackbird or Ring Ouzel this year; the latter would have bred one year at Waternish, had not Captain Macdonald killed the male, before he knew that the female was about.

The Robin was well represented, and it is strange in what wild situations one meets with this bird in Skye; on the hill-side, far from houses and even from underwood. The Common Wren was abundant. The Dipper haunts every burn, and nests under small cascades. The Common Whitethroat was represented in Glendale by a single pair, which nested in a gully between Glasphin and Fasach. The Willow Wren is absent from Glendale, but I saw two males at Greshornish on May 17th, and called the attention of the ladies to the song, which was new to them. The Wheatear and Whinchat breed plentifully throughout the parish

of Durinish; but I could find no Stonechats this year, and only saw a single male in 1882. The Pied Wagtail breeds in Glendale but not numerously.

The Meadow Pipit is the commonest small bird in the district, but the first young I found this year were hatched on June 2nd, while in 1882 I found young at least four days old on May 22nd, in Eigg. The Rock Pipit breeds all over the parish near the sea. The Sky Lark is numerous, and sings from 1.30 a.m. in clear weather.

The Yellow Bunting is plentiful; in Skye it often omits the final syllables of the song altogether. The Reed Bunting is common, and the Corn Bunting also numerous; the latter roosts chiefly on the ground, but a large flock always gathers together at dusk to roost in a small patch of firs. In these firs (the only trees in Glendale) three pairs of Chaffinches breed; this year the first young were only hatched on May 30th. Two of the old males sang in the firs the livelong day; the third insisted on singing his lullaby from a small green knoll, always perching on the bare sod—an idiosyncrasy new to me.

Twites are more numerous in Glendale than in 1882; even on May 20th we found a flock of between twenty and thirty feeding together on some broken ground. Their name is evidently due to their cheery "twee, twee" on the wing. The House Sparrow was present, but not numerous. The Hedge Warbler was not so strongly represented with us as near Portree; but one pair nested this year in Glendale. The Starling is as numerous as ever.

Three broods of Ravens were hatched out on our wild cliffs; our shooting tenant's keeper shot four, two of which he decapitated; the others I saw shot myself, and sent them to Mr. Aplin. Other broods were reared at Greshornish and Hosabost, for the old birds are too acute to be often betrayed by keepers.

The House Swallow is present with us in small numbers, but I cannot ascertain where it nests in Glendale; perhaps it may do so in the cliffs, for its usual haunts are scarce. The Goatsucker I have not yet seen in Durinish, though it breeds in the south of Skye. The Rock Dove is numerous; but our ground officer, a fair observer, states that it is numerically less strong than formerly. He ascribes its decrease to the fact that cattle are fed less out of doors during the winter than formerly, and that the Rock Doves, in consequence, now come off very badly at that

season. I am also assured that ours are larger and paler Rock Doves than those of Sleat, but I have not yet compared examples from the two districts.

At Greshornish and Dunvegan the Rook breeds numerous, and spies from the latter establishment often visit Glendale; in a year or two they will certainly descend on our small patch of firs. Jackdaws are scarce in Durinish. The Cornish Chough breeds in our parish, but only, so far as I know, in one single cliff, where they are preserved; this pair of old birds reared four young this year, which flew at the end of May.

Red Grouse are abundant in Glendale, and Partridges plentiful at Waternish; a few pairs of the latter breed in Glendale, and may be seen in very wild situations. The Lapwing is only a casual visitor to Glendale, though breeding abundantly in some parts of Skye.

The Oystercatcher is common, and breeds here; I took a clutch of eggs on May 19th. The Snipe also breeds plentifully with us, as does the Golden Plover. Apropos of Snipe, I may say that Dr. Maclean, Orbst, saw fifteen Solitary Snipe in Skye in the autumn of 1882, and shot seven of them on Orbst ground. Though familiar with the bird he had not previously seen it in Skye. A few Curlew are often to be seen about Dunvegan Loch. We had a few Whimbrel also up to May 20th, 1883. There is not cover with us for Woodcock to breed in, or perhaps some of the numbers that visit us in winter might remain.

The Common Sandpiper is to be heard everywhere, and I obtained a clutch of eggs on the edge of Dunvegan Loch. Whilst rowing to Dunvegan, on May 16th, I was delighted to see a pair of Purple Sandpipers feeding on the uncovered tangles; we backed water to examine them, in which their great tameness assisted. As I was hurrying to keep an engagement, I had to give them in charge of the ground officer to watch, as I hoped they might be tempted to breed on the Skinidin Island in question. Unfortunately they departed when the tide rose, having evidently only dropped to rest while proceeding to their breeding station.

Herons often visit Glendale, chiefly from Sleat, I fancy, though a few pairs are said to breed near Dunvegan. The Corn Crakes bred in our garden this year as heretofore, but were late in going to nest; I had some excellent opportunities of studying their movements this year. A pair of Bald Coots were breeding this year

on Loch Waterstein. Our other freshwater birds are Mallard and a single pair of Dabchicks ; the former breed numerously.

On May 19th I found the beginning of a Red-breasted Merganser's nest on one of the Skinidin Isles in Dunvegan Loch ; it was within a short distance of the cairn in which I examined a clutch of seven eggs on May 30th, 1882. As I required some eggs for friends this year, but was unable to revisit the nest myself, I sent the ground officer back on June 17th, when he found nine eggs ; he also found some people professedly searching for whelks where the Mergansers "grow," and therefore took all the sitting. *Mergus serrator* breeds in other localities in the parish besides our islets, and Mr. K. Macleod, of Greshornish, often shoots them late in the year on the Greshornish river, and considers them excellent eating, if properly dressed. Of other waterfowl I may mention that some Tufted Ducks visited a pool at Waternish, on which some tame Sheldrakes live, late in 1882, and that one example was shot.

Black Guillemots are very plentiful this year in our breeding-station and their feeding-grounds around it ; they breed also about Dunvegan Head. Puffins and Razorbills are as numerous as usual. Cormorants are apparently more numerous with us this spring than last. Terns are very scarce indeed, and I saw only the five commonest species of Gulls. Adult Solan Geese often visit Lochs Portril and Dunvegan.

I was glad to hear that the Storm Petrels continue to hold their own in the only breeding-station known to me, where they are preserved and unmolested, unless by interfering Puffins. I was unable to get a glimpse of a single Manx Shearwater on the Skye coast this spring, though on Friday, May 11th, we saw a great number south and north off Coll, on and after 3 p.m. ; some were resting on the water, but more exhibiting their quick semicircular flight ; they struck us as being perhaps on passage.

Of nobler birds, I was unable to see any eyrie visited by the Sea Eagle. At the very last moment I scrambled to the foot of the nest from which a young one was shot in 1879 ; but though far less plentiful than formerly, and not now breeding on our ground, a young one was successfully reared in our neighbourhood last year, and the old birds are again breeding on that same property, though they have shifted their quarters to another part of it. Several pairs of Peregrines built this year on the sheer

cliffs which defy our local cragsmen ; but I am sorry that at least four female Peregrines were destroyed in the parish after the breeding season was far advanced. Besides Peregrines I saw a Hen Harrier on the wing, sailing over Waterstein. Merlins, Kestrels, and Sparrowhawks were breeding in the parish, though I do not think we have ever any merlin nests on our ground. A single Common Buzzard was seen at Orbst in the middle of May last.

In making the foregoing observations, I have included in the ground under consideration the whole parish of Durinish, the north-west portion of Skye, which I trust I may be able to work out more fully later on.

THE LAND AND FRESHWATER MOLLUSCA IN THE VICINITY OF OXFORD.

BY S. SPENCER PEARCE, B.A.

(Concluded from p. 331.)

TERRESTRIAL MOLLUSCA.

Fam. I. LIMACIDÆ.

Arion ater, Linn.—Common in damp places. The species of this genus are to be found very early in the spring. A handsome dark brown variety is often taken in the Kimmeridge clay-pits of Shotover Hill, on the west side, and under rotting wood in Wick Copse.

A. flavus, Müller.—Rather rare ; amongst dead leaves, especially those of the beech, in a wood on Wytham Hill (Feb. 1881) ; under decaying wood near Wick Copse. Mr. Whiteaves records it from Watlington. This species is somewhat difficult to distinguish from some of the yellow varieties of *Arion hortensis* ; it seems, however, to be best separated from that species by the following points:—(1). In the shape of the body and foot when fully extended, which is more slender and tapering towards the tail. (2). In the position of the respiratory orifice, which is more centrally situated with respect to the shield. (3). In the colour of the animal, the tentacles always being black-purple or violet-brown ; the ground-colour of the body being a pale blue-grey hue, nearly obscured by the prevailing yellow colour, which becomes—

towards the edges of the mantle, foot and tail—more vivid than is the case with any var. of *hortensis*.

A. hortensis, Férussac.—Very abundant and generally distributed. In addition to the ordinary grey and striped form, specimens of various yellow, buff, brown, and whitish hues also occur.

Limax flavus, Linn.—I have had no opportunity of meeting with this slug at Oxford, but doubtless it is still common in cellars, as mentioned in Mr. Whiteaves' list.

L. agrestis, Linn.—Common everywhere.

L. lævis, Müller.—Not uncommon around Oxford under stones and logs of wood in very wet places; by streams at South Hinksey, by Botley, at Wytham, and in Wick Copse. Unmistakably distinct from *L. agrestis*.

L. arborum, Bouchard-Chantreaux.—Rather local, being generally confined to beech-trees, which are not very plentiful in the immediate neighbourhood of Oxford. On beeches in wood on Wytham Hill and at Stonesfield. At Cumnor I found it in the rather unusual locality of a loose-stone wall. During hybernation this slug loses colour and becomes quite pale. I have it also from the more distant localities of Kingham, near Chipping Norton, and Goring; while Mr. Whiteaves records it from Watlington.

L. maximus, Linn.—I have not been fortunate enough to find this species. Mr. Whiteaves, writing of it under the name *cinereus*, says that it is remarkably scarce in the immediate vicinity of Oxford, but is very large and abundant in the southern parts of the county.

Fam. II. TESTACELLIDÆ.

Testacella haliotidea, Drap.—Occasionally met with in digging in vegetable gardens around Oxford, especially on the eastern side of the city. A specimen preserved in the University Museum, and added to Mr. Whiteaves' collection, was found "in a garden on Headington Hill," and I have received live specimens from a cabbage-field near St. Clement's Church.

Fam. III. HELICIDÆ.

Succinea putris, Linn.—Common on plants by rivers, streams and ditches. The most usual place where this and the following species hibernates is under the bark of pollard-willows that border

streams, up the trunks of which they crawl to the height of six to eight feet from the ground. They seem to have found by experience that this is the only way of securing safety from the extensive floods which are so frequent at Oxford during the colder months of the year.

Succinea elegans, Risso.—By ditches in several places; near Marston Ferry, near Watereaton, by the stream in Wick Copse, and near Eynsham Bridge.

Vitrina pellucida, Müller.—Rather common; in shady woods, and on hedge-banks amongst moss and dead leaves and under stones. It is active and very hardy: I have seen it crawling about when snow was on the ground during the commencement of a thaw which succeeded a severe frost, in January, 1881. It is found, indeed, more frequently alive in the winter months, from November till February, after which date the number of living individuals seems to dwindle, till in summer it is difficult to find any.

Zonites cellarius, Müller.—Abundant in damp places everywhere.

Var. *albida*.—Occasionally found with the ordinary form; Wytham Hill, and near Islip.

Z. alliaris, Müller.—Rather plentiful under stones, especially on limestone soils.

Z. glaber, Stüder.—Rare. I first took it very sparingly under stones lying about the borders of Wick Copse, and subsequently a few specimens from near Woodeaton.

Z. nitidulus, Drap.—Very abundant; burrows under loose earth.

Var. *nitens*.—In quarry of Portland sand on Shotover Hill, under loose stones.

Z. purus, Alder.—Rare. I have only found it amongst moss and dead leaves in Powder Wood, near Cumnor Hurst.

Z. radiatulus, Alder.—Not plentiful; in moist shady places and woods; Wick Copse, wood near Childsworth Farm, and Powder Wood.

Z. nitidus, Müller.—Plentiful on the marshy meadow land about Oxford, along canal and ditch banks.

Z. crystallinus, Müller.—Abundant in damp places.

Z. fulvus, Müller.—Not uncommon in woods and copses, both in dry and wet places. Specimens taken from a dry locality are generally of larger size and paler colour.

Helix aculeata, Müller.—Not plentiful; amongst moss and dead leaves in copse and woods; copse at Sunningwell, Wytham Wood, and according to Mr. Whiteaves in Stow Wood.

H. pomatia, Linn.—Very local; in woods and copses, and along the railway-bank near the village of Stonesfield, where it is plentiful. Mr. Whiteaves gives Wychwood Forest as a locality. The variety *albida* has been found near Charlbury and in Wychwood Forest (Whiteaves). A specimen of this variety is to be seen in the University Museum. A large colony of this snail is now thriving in the Botanic Gardens at Oxford, the descendants of specimens introduced from Stonesfield many years ago. In a large bed of foreign composite plants they are especially abundant, feeding on the lower and decaying leaves, for being an earth-loving species they hardly ever attempt to ascend the stems of the plants. During the genial weather of May and June they are busily engaged in laying their eggs, which are deposited to the number of fifty to eighty in a circular hole, excavated two or three inches deep for that purpose. A nest that I had under my observation contained fifty-eight eggs of a whitish colour, of the size of peas, laid on the 10th June. The somewhat opaque whiteness of the eggs, by the third week from deposition, had turned yellowish, and the fry emerged between the 8th and 18th July following, furnished with a smooth, transparent, fragile and somewhat globular, horn-coloured shell of one whorl and a half to one whorl and a quarter. For two or more days after emergence the young snails fed on the remnants of the egg-tests, but afterwards took readily to lettuce-leaves, of which they ate at first only the epidermis. The transparent horn-colour of the shell soon became more opaque, and colouring matter, in the shape of blotches and rudiments of brown bands, made its appearance by about the fourth week. The shells were added to during the whole period from their emergence from egg-state until just before they burrowed in earth for hybernation, in the first week of November, at which time between two and three-quarters and three whorls had formed. They remained dormant till the beginning of the following April, when they again became active and commenced making further additions to their shells.

H. aspersa, Müller.—Plentiful everywhere, though more abundant on the calcareous soils. A scalariform monstrosity, from Summertown, is in Mr. Whiteaves' collection in the University Museum.

H. nemoralis, Linn.—Abundant; taken in company with *H. arbustorum* on boggy ground by stream close to South Hincksey. The varieties numerous and very fine, among which I have some forms, of an unusual uniform green and dull purple colour, that I have not seen elsewhere.

H. hortensis, Müller.*—Very frequent, though not so abundant as the preceding species. At Radley I found this species with *nemoralis* and *arbustorum*. The var. *hybrida* I have taken on a hedge near Shotover Hill, and Mr. Whiteaves took it on nettles in Barton Lane and at Stanton St. John's.

H. arbustorum, Linn.—Very plentiful in moist places by river- and stream-banks. The var. *flavescens* is not uncommon near South Hincksey and Radley. Vars. *major* and *alpestris* rare; near South Hincksey.

H. cantiana, Montagu.—This species seems now to have a wider extension than in 1857, when Mr. Whiteaves recorded it in his list as limited to the Headington district. I have obtained it near South Hincksey, at Kennington, near Stonesfield, at Stow Wood, in quarries of coral-rag near Cowley and Horsepath, and of Portland sand on Shotover Hill. In quarries it is generally discovered under loose stones and *débris*, but its usual habitat is nettles and other plants by roadsides and hedge-banks. Hardly ever taken off calcareous subsoils.

H. rufescens, Pennant.—Very abundant everywhere.

Var. *albida*.—Common.

Var. *conica*.—Frequent, especially among dead leaves in woods.

Var. *minor*.—Rather common. All three varieties are found sometimes together.

H. concinna, Jeffreys.—Rather frequent on roadsides and hedgebanks under stones and among nettles; South Hincksey, Stonesfield, Garsington and Wheatley. I have it also from Kingham, about twenty-three miles N.W. of Oxford.

H. hispida, Linn.—Very abundant, especially in wet places.

Var. *albida*.—Under stones at Islip and at Stonesfield.

H. virgata, Da Costa.—Abundant in calcareous districts. The bandless variety is always found with the banded form.

* In the opinion of Dr. Gwyn Jeffreys it is impossible to distinguish *Helix hortensis* from *H. nemoralis* except as a variety, the former being more northern, and the latter more southern in geographical distribution.
—Ed.

H. caperata, Montagu.—Plentiful; in meadows, cultivated fields, and banks.

Var. *ornata*.—Near Stonesfield.

H. ericetorum, Müller.—Not plentiful; on dry grassy banks and borders of cultivated fields; near Wick Copse, with *H. virgata*, and roadsides near Cumnor Hurst and near Shotover Hill.

Var. *alba*.—Generally taken with the banded form.

Var. *minor*.—Rare; on short grass by large coral-rag quarry on the Headington Road, near Wheatley.

H. rotundata, Müller.—Abundant; under decaying wood, stones, and dead leaves.

H. rupestris, Stüder.—Apparently confined to loose stone walls, where it abounds on the under sides of topmost stones.

H. pygmæa, Drap.—Not plentiful; in damp and dry places and in woods amongst dead leaves in Powder Wood, and under stones by brook near South Hincsey, with *Vertigo edentula*, *Helix hispida*, and other moisture-loving mollusks.

H. pulchella, Müller.—The smooth form is plentiful in wet places under stones and logs; and the variety *costata*, the most common of the forms, is invariably found in dry places, as on stone walls and dry banks.

H. lapicida, Linn.—I have met with this species sparingly near Charlbury, on an ivied wall, but abundantly on beech trees on the chalk near Goring. The localities mentioned by Mr. Whiteaves are “common in an oolite quarry near Stow Wood,” where he says, “it comes out only after repeated rain, and crawls about on the wet brambles,” also in Wytham Wood and at Stonesfield. I have not been able to discover it in these places.

Bulimus obscurus, Müller.—Very abundant on the chalk, but not so plentiful on the oolite, yet generally diffused.

B. montanus has not yet been discovered nearer Oxford than Shirbourne Wood, near Watlington, as recorded by Mr. Whiteaves in his paper.

Pupa umbilicata, Drap.—Very abundant on ivied walls, old trees, &c.

Var. *edentula*.—Two specimens from an old pollard-willow near South Hincsey.

P. marginata, Drap.—Not uncommon on loose stone walls, dry banks, and under stones on the more calcareous soils. Generally in company with *H. pulchella*, var. *costata*. The best localities

are North and South Hinckseys, Islip, Woodeaton, Headington, Garsington, and Sandford, near Fyfield.

Vertigo pygmæa, Drap.—Rather frequent and generally diffused. It does not seem to show any preference for elevated situations, as Mr. Whiteaves has inferred from the localities he gives, viz., Headington Quarry, Bagley Wood, and near Stow Wood; for I have taken it under stones by brook near South Hincksey, together with *V. edentula*, and moreover it would be difficult to explain the fact that this shell is found in such numbers in the river alluvium washed down during flood-time, unless it inhabited the low-lying lands near the river.

V. pusilla, Müller.—Very local; it is still to be found in plenty on the ivied wall near Woodeaton, as recorded by Mr. Whiteaves.

V. edentula, Drap.—Rare; amongst dead leaves and moss, and under stones in woods, copses, and marshy places; by stream near South Hincksey, copse near Childsworth Farm, near Sunningwell, and “in a marshy hollow near Stow Wood,” according to Mr. Whiteaves.

Balea perversa, Linn.—Common on old walls and trees, especially pollards.

Clausilia nigricans, Pulteney.—Abundant and generally distributed.

Var. *Everetti*.—Found plentifully with the type.

Var. *dubia*.—A few specimens of ventricose form and of larger size from Wytham Hill I take to belong to this variety. It also appears in the Whiteaves collection.

Var. *gracilior*.—A single individual of this variety is in the Whiteaves collection.

Var. *tumidula*.—At Islip. I have also a small wrinkled variety from loose iron-stone walls near Wheatley.

C. Rolphii, Gray.—I am able to record a new locality for this species, which is more frequently found in the southern counties. While searching under a hawthorn hedge near the village of South Hincksey, in the early spring of 1880, I came upon, first one, and then several others of this species. On comparing them with Surrey specimens in my cabinet they proved exactly similar in all points excepting colour, the Berkshire specimens being of a darker tawny brown. It must, I think, be put down as rare, as I have failed to find it again, either in the locality just mentioned or in any other in the vicinity.

C. laminata, Montagu. Not common; in woods, generally on or at the base of beech trees; on beech trees on Wytham Hill; at the foot of oak and ash trees in Wick Copse. Mr. Whiteaves gives Stow Wood and Stonesfield in his list.

Cochlicopa tridens, Pulteney.—Local and not very plentiful; found only amongst wet moss in groups of from six to ten individuals in swampy parts of Wick Copse and Stow Wood, near Headington.

C. lubrica, Müller.—Common and generally distributed.

Achatina acicula, Müller.—Dead shells of this species abundant in the surface-soil near Wick Copse, Headington, South Hincksey and other localities.

Fam. IV. CARYCHIIDÆ.

Carychium minimum, Müller.—Abundant everywhere in damp places under stones, dead leaves, sticks and moss.

Fam. V. CYCLOSTOMATIDÆ.

Cyclostoma elegans, Müller.—On hedge-banks and woods where the soil is calcareous; parts of Bagley Wood, at South Hincksey, Wick Copse, near Headington, Horsepath, and also at Goring and Streatley.

Acme lineata, Drap.—After many searches for this rare species, I discovered five specimens among moss growing on a clump of *Carex paniculata*, by a stream running through the boggy swamp at the foot of Wick Copse.

This list contains ninety-three species, of which seven species, viz., *Sphærium ovale*, *Limax lævis*, *L. arborum*, *Testacella haliotidea*, *Zonites glaber*, *Z. purus*, and *Clausilia Rolphii*, are not mentioned at all in Mr. Whiteaves' list, and two others, viz., *Planorbis nautilus* and *Arion flavus*, hitherto recorded only as occurring near Banbury and at Watlington respectively, have been found quite near Oxford.

The following four species, which appear in Mr. Whiteaves' list, need to be rediscovered before they can be permanently retained in any catalogue of Oxford shells, viz.:—

(1). *Helix sericea*.—A species which Mr. Whiteaves himself failed to find, and which he recorded solely on the authority of a Mr. Norman, who took it "in marshy ground at the foot of Bullingdon," about thirty years ago.

(2). *Pupa secale*.—Of this species I have failed to find the slightest trace in any quarry at or near Headington. Mr. Whiteaves says it is "extremely local," yet "found in great abundance at Headington Quarry." Perhaps there has been some mistake about the identity of this species.

(3). *Limnæa glabra*.—Mr. Whiteaves mentions that the ditch whence he took this species was subsequently destroyed, and since then it does not seem to have been found again.

(4). *Limnæa glutinosa*.—"One fine specimen" was taken by Mr. Whiteaves "from a clear brook communicating with the river on the right-hand side of the path between the railway-lake and South Hincsey." This solitary specimen does not appear in the collection at the Museum. A series of this species will be found there, but the absence of labels makes it impossible to ascertain whether or not they come from the immediate neighbourhood of Oxford.

ORNITHOLOGICAL NOTES FROM MAYO AND SLIGO.

BY ROBERT WARREN.

THE winter and spring of 1882-83 were remarkable for the scarcity of wildfowl of all kinds in Killala Bay and the Estuary of the Moy. October began with a severe storm on the 1st, and, with the exception of nine days' frost and some snow from the 6th to the 15th of December, the entire winter was unusually wet and stormy; the lowest temperature indicated by the thermometer during the frost was on the night of the 10th December, when the mercury fell to 19°.

A fair number of Wigeon appeared at the latter end of November and during the week's frost in December, but they afterwards left for some other locality, and for the rest of the season the numbers that remained about the Estuary were smaller than I can remember.

A fair number of Curlews frequented the sands throughout the winter, but only a tithe of the immense flocks usually to be met with. The few Lapwings that were about disappeared, as usual, on the appearance of the frost in December. No Golden Plover visited the sands; a few Redshanks, and only three Greenshanks were to be seen about their old haunts along the

shores, and I do not remember meeting with either Turnstones or Godwits throughout the winter. An odd Sanderling or two, and a few Dunlins, but no Knots, were to be seen on the sands. Late in spring a score of Godwits were seen near Bartragh. It is very difficult to account for this great scarcity of wildfowl. Some say it was caused by the comparatively open winter, which was not sufficiently severe to drive them from more northerly feeding-grounds; but this I doubt, for I have often seen an average number of wildfowl of all kinds frequenting the bay and estuary during winters so mild and wet that nothing severer than hoar frost occurred throughout the season.

On the 14th November, when lying in my punt near the islands of Roserk, I heard the call of a Spotted Redshank, and saw the bird flying near the shore of the island, where I shot one of these birds on the 30th October, 1876. These little islands are favourite haunts of all our waders.

Some time early in November I saw an immature Long-tailed Duck on the river near Moyfort. On the 24th April I went down the Moyne channel in my punt almost as far as Killala, to see whether any waders had lingered on about the Bartragh and Moyne sands. I only met with about twenty Godwits and one Grey Plover, but neither Knots, Turnstones, nor Sanderlings were visible.

A pair of Long-eared Owls reared two young ones in an old Magpie's nest close by here, and from the many good opportunities I had of hearing the male bird calling, I am more inclined than ever to describe the call as a "moan" rather than a "hoot."

Of our summer visitors, the Sandwich Terns, as usual, formed the advance guard, appearing in the bay on the 1st of April; next were the Chiffchaffs, on the 6th; Willow Wrens on the 8th; and the first Swallow was seen near Ballina on the 23rd. Whimbrels were heard on the 28th April, and Common Terns visited the bay on the 29th, and on the same date both Corn Crake and Cuckoo were heard at Killanly. Sedge Warblers were observed on the islands of Lough Conn on the 19th May; but neither the Whitethroat nor Spotted Flycatcher were heard until the 20th.

On the 19th May, accompanied by my friend Dr. Darling, of Ballina, I visited some of the islands in Lough Conn, but the

only nests we found were a few of those of the Black-headed Gull, with eggs. The Common Terns, though assembled on the islands, had not begun to lay. When passing a reedy bay we disturbed a male Shoveller, which evidently had a mate hatching somewhere near; he showed much disinclination to leave the locality, never flying more than a couple of hundred yards away from where he was first put up. Although known to breed in other parts of Ireland, this is the first occasion on which I have met with the Shoveller in summer in this district.

Corn Crakes arrived in unusually large numbers this summer, and on trying to estimate the number of males heard calling in the adjacent fields I came to the conclusion that there were fully three times the average number.

NOTES AND QUERIES.

BIRDS.

Cuckoo's Eggs.— Everything connected with the mystery of the Cuckoo's egg is of such great interest to oologists that some observations of mine, made this summer, may be thought worthy of record. Near my residence there is a long meadow, bounded by a wide ditch, at the edge of which willow-bushes grow in profusion. On June 6th, whilst searching in these willows for nests of the Reed Warbler, I found one containing five eggs of that bird and one of the Cuckoo, all six slightly incubated. Visiting the locality again on June 23rd, I found another Reed Warbler's nest, with one egg and a Cuckoo's egg, both quite fresh. The same day I found a Reed Warbler's nest partly built. On June 28th I found an egg of the Cuckoo in this last-mentioned nest, but no eggs of the Reed Warbler. The date of my next visit was July 6th, when two eggs of the Reed Warbler, slightly incubated, were in this nest. On the same day I found another nest of this species, with two eggs and a Cuckoo's egg, all three freshly laid. These four eggs of the Cuckoo were undoubtedly laid by the same bird, for they are all marked with a reddish brown zone round the larger end, and bear such a strong resemblance to each other that it is only by my marks that I am able to distinguish them. The only perceptible difference is in the last found, which is slightly smaller than the other three, though exactly resembling them in colour and markings. I think that several deductions may safely be drawn from these facts. The first is that the Cuckoo does not always turn out an egg from the nest when she deposits her own. The reason that I have come to this conclusion is, that

during the many years that I have searched for nests of the Reed Warbler, I have only found three (including the nest now referred to) with five eggs. Four has always been considered a full clutch, and I have constantly known of two and three eggs only laid and hatched. Another is, that the Cuckoo will always prefer to deposit her eggs in the nests of the same species, if she can find them, and under precisely similar conditions. In this hedge of willows I found this year at least twenty nests of the Reed Warbler, some quite low down, within two feet of the water in the ditch, and others quite high up. The one I took on July 6th was over twenty feet from the ground, as I proved by measurement. Each nest that had a Cuckoo's egg was high up and had to be climbed for. Again, these four eggs being found within a distance of half a mile shows that the Cuckoo does not wander far if the nests of the species she prefers are tolerably plentiful. The number of eggs that a Cuckoo lays in a season has often been questioned. My observations prove that this bird laid at least four eggs this year. From the regularity with which the last three were laid, I think we may conclude that another egg would be deposited during the interval between the 6th and 23rd of June, which may have been placed in adjacent grounds to which I had not access. I did not see any trace of a young Cuckoo, in spite of a thorough search. My collection furnishes evidence of an analogous case. A correspondent of mine, in Saxony, sent me a series of four Cuckoo's eggs, all bearing such a strong resemblance to each other that probably every oologist who sees them would acknowledge that they were laid by the same bird. They were found as follows:—

June 5th, in nest of Reed Warbler, with 2 eggs.

„ 14th, „ ditto, „ 3 „

„ 22nd, „ Marsh Warbler, „ 4 „

July 9th, „ Yellow Bunting, „ 4 „

Here, again, there is a lapse of over a fortnight during which no Cuckoo's egg was found, and in this instance the lapse occurs between the third and fourth eggs, but in the one I now record between the first and second. As I have no evidence to prove that a thorough search was made for this presumably missing egg, but, on the other hand, should infer that no such search was made, I am of opinion that these two cases are worthy of record, as going some way to prove that the usual number of eggs laid by a Cuckoo is five. Should this Cuckoo return to the same locality next summer, I hope to continue my observations; and I trust that any of your correspondents who may have had similar experience will communicate it to 'The Zoologist.'—EDWARD BIDWELL (Richmond).

Peculiar Habit of the Starling.—Adverting to Mr. Cambridge's note on this matter (p. 334), I may observe that, for years past, I have encouraged the breeding of the Starling in the ivy above my dining-room

window, in partitioned boxes placed for them in the same vicinity, and elsewhere about my premises. Previously to the recent severe winters it was but rarely that less than twelve pairs bred in the places named. This year the number has risen from the two pairs of the springs succeeding those hard winters to five pairs, all of them nesting in the ivy or the boxes; and this year again, as in all former years, the eggs on the lawn, as noted by Mr. Cambridge, have been repeatedly observed. One day I picked up three, one entirely uninjured, a second with a hole in the side similar to the hole made by a Crow in a hen's or duck's egg when found and carried off by him in his bill, and the third much broken. My impression has been for years that these eggs—almost invariably carried away for from fifteen to thirty yards, not simply dropped as if thrown out from the nest—were so dealt with as the accompaniment, or at least the result, of some squabble among the occupants of the adjacent nest-places. That the Starlings do squabble, and carry on their scrimmages with some tenacity, moreover, almost goes without saying. I have seen them once and again actually fall in their resolute mutual squabbles on to the gravel terrace below their nests, and lie there, still grasping each other and struggling, for minutes. Once not long since one of my children went out to part a couple which had so fallen, or if not to pick them up. They lay with panting breasts and gaping bills until her hand was all but on them, and flew up into the ivy again. They fight on the chimney tops, too, and some half-dozen or half-score times within the last twenty years one of the combatants has come blundering down the chimney into the bed-room below, sometimes rather to the alarm or discomfiture of the occupant, if a child or a stranger. Nor is the "peculiar habit" limited to the eggs, in my experience. Young unfledged birds are dealt with on the same principle, and only this year I have seen two young Starlings, still in the down, sprawling on the grass. Here let me mention one other fact. My youngest son this year placed a Starling's egg under one of his tame Pigeons. The egg was duly hatched, and the young Starling fed by the Pigeon until it had grown to nearly its full size for leaving the nest. Unluckily he then took it into his head that the Pigeon did not feed its fosterling adequately, and began to supplement the feeding himself, but not with any knowledge of what the young Starling ought to be fed with, or when or how; and it consequently died—I think from nothing but injudicious dieting. If the bird had lived to fly, some interesting observations might perhaps have been made.—J. C. ATKINSON (Danby Parsonage).

Egyptian Nightjar in Nottinghamshire.—On the 23rd June last my keeper shot at a rabbit in Thieves Wood, near Mansfield, and at the report of the gun a Nightjar flew out of the edge of the wood. Its light colour attracting his attention, he fired his other barrel at it and brought it down. Thinking it only a young bird, he did not send it to me,

but kept it two days in his house, and then threw it into the back yard, where it lay until the afternoon of the same day, hens, pigeons, and children in the mean time doing their best to spoil its appearance. By good luck I went up to see him, and hearing that it was a light-coloured bird I went to look at it, and found what I thought was a pale variety of the Common Nightjar. I need hardly say how vexed I was that it had not been brought to me, but I cut off the wings and tail and brought them home. On comparing them with *Caprimulgus europæus*, I saw a striking difference, and sent back for the body, with which my birdstuffer has contrived to make a skin. I wrote to tell Mr. J. H. Gurney, jun., and he at once replied, "Are you sure it is a variety? I think it is very likely from your description to be *Caprimulgus isabellinus*; if so, it is a new British bird, and you have a prize indeed." I asked him to come and see it, which he did, bringing with him a skin of *Caprimulgus isabellinus*, kindly lent by Mr. Seeböhm. On comparing it with mine, it agreed in every way, both in colour and markings, as well as size; but the most striking point is that the tarsus is an eighth of an inch longer than in *C. europæus*. We were both convinced, as also was Mr. E. Bidwell, who was staying here at the time. This species has occurred in Heligoland, and is now in Herr Gätke's collection. We have watched the place where my specimen was shot, but no other has been seen.—J. WHITAKER (Rainsworth Lodge, near Mansfield).

[A coloured plate of the Egyptian Nightjar will be found in Shelley's 'Birds of Egypt' (pl. 8), as also in Dresser's 'Birds of Europe' (vol. iv. pl. 272), where it is figured under the title of *Caprimulgus ægyptius*, Lichtenstein, that name apparently having precedence by two years over *Caprimulgus isabellinus*, bestowed by Temminck in 1825. The bird is distinguishable from the Common European Nightjar by its pale sandy grey coloration, more finely barred tail, with white tips to the inner webs of the primaries, and no white spots at the end of outer tail-feathers. Its range, according to Mr. Dresser, is not very extensive. It is found in North-East Africa, going eastward to Turkestan, where it was obtained by Severtzoff, and has wandered as far north as Heligoland (Ibis, 1877, p. 163), but has not hitherto been found in any other part of Europe. According to Capt. Shelley (*op. cit.*, p. 175) it is found throughout Egypt and Nubia, and appears to be most plentiful in spring and autumn, when it is generally in flocks. The eggs are described by Von Heuglin (Orn. Nord. Ost. Afr. vol. i. p. 128) as being smaller, paler, and more ochreous-yellow than those of *Caprimulgus europæus*, and clouded with light ash-blue and brownish yellow. Should further examination of Mr. Whitaker's specimen confirm his identification we shall have three species of *Caprimulgus* recorded as visitors to the British Islands; for, as some of our readers will remember, Mr. John Hancock some years ago obtained a specimen of *Caprimulgus*

ruficollis, Temminck, which was shot at Killingworth, near Newcastle, as recorded by him in 'The Ibis' for 1862, p. 39. This species occurs in Spain and Portugal, the South of France, and Malta, and is common in North-Western Africa.—ED.]

Note on an Egg of the Kea.—After many years of fruitless search and enquiry, through shepherds and musterers, by the kindness of Mr. H. Campbell I am at last in possession of an egg of this alpine parrot (*Nestor notabilis*, Gould). The specimen, with three others, was taken from a nesting-place in an almost inaccessible fastness of rocks, high up the mountains near Lake Wauaka. One egg was broken in getting it out; two of those remaining have also come to grief. Placed among a series of eggs of the Kaka, *N. meridionalis*, it can be picked out at once; it is larger, rougher, the surface being granulated, dotted over irregularly, with small pits, a very few slight chalky incrustations towards the smaller end. The shell is very stout and thick, exceeding in that respect any examples that I have seen of the eggs of the Kaka. It is broadly ovoid, measuring one inch seven lines in length; in width it is one inch three lines.—T. H. PORTS (Ohinitahi, June 5, 1883).

[The Kaka, or Brown Parrot, *Nestor meridionalis*, lays four white eggs in the hole of a tree. They are deposited on the decayed wood, without any other material by way of nest.—ED.]

Dipper singing in Winter.—Reverting to the observations on the Dipper singing during frost (p. 78 *et seq.*), I may say that the Messrs. Duckworth, of Carlisle, have heard it in full song in every month of the year. Until last year they had never heard it in November (as stated in a paper read by Mr. W. Duckworth before the Carlisle Field Club); but, in November, 1882, they both heard it in song on more than one occasion. Mr. W. Duckworth reminds me that though Dippers sing throughout the year, each individual, of course, sings for a much briefer period. He has also noticed that the Dippers of the "fell" streams often nest later than those whose breeding quarters are at a lower elevation. For my own part I have only heard the Dipper sing during winter, but then my experience of the bird is very different to the protracted attention which Messrs. Duckworth have always paid to it.—H. A. MACPHERSON (Carlisle).

Gannet caught in a Net.—On the 25th July, while returning from sea-fishing within a mile of the Glandore Pier, I was much interested by the tactics of a Gannet, *Sula bassana*, Briss. The bird was ranging almost side to side of the harbour, and every now and then would dart down after a fish, plunging into the water with such impetus as to throw up spray to the height of five or six feet. My boatman told me that some days before a Gannet had been found entangled in a mackerel-net. He stated that this bird breeds on "the Stags," an isolated rock in the ocean, off Toe Head

(between Cape Clear and the Galley). I had no opportunity of visiting "the Stags," and testing the accuracy of his statement. The Gannet is, I believe, seldom seen in such narrow and frequented waters as the Harbour.—C. DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

[The "Stags" above mentioned are not to be confounded with the "Stags of Broadhaven," off the coast of Mayo, a former nesting-haunt of the Gannet, but now deserted.—ED.]

Black Tern and Dunlin in Nottinghamshire.—When walking round the ponds here, on the 28th April last, I saw three of these elegant Terns flying over the water; they were very tame, often coming within ten yards of me. I was very much struck with their easy flight, and though numbers of Swallows and Martins were flying round they did not suffer by comparison. From the side of this piece of water I flushed a Dunlin, which flew right away. On another pond I found Tufted Ducks (four pairs), Shovellers, Common Ducks, and Teal.—J. WHITAKER (Rainworth Lodge, near Mountsfield).

A white Curlew.—A white Curlew, *Numenius arquata*, was captured on August 2nd, near Huntspill, and sent to me by Mr. Clement Govett, of that place. In a note sent with the bird Mr. Govett writes:—"A man caught it alive, entangled in some weeds in a ditch near the sea, and killed it by putting a needle through its head. Knowing you were fond of such birds I secured it, and have sent it to you."—JOHN MARSHALL (Belmont, Taunton).

[Albinism, though of not unfrequent occurrence amongst the passerine birds, is rarely observed in the *Limicolæ*. A long list might be made of white varieties of the former, but amongst the latter comparatively few could be enumerated. In February, 1851, a pure white Knot was shot near Maldon, Essex, as recorded in 'The Zoologist' of that year (p. 3116), and in the autumn of 1875 a white Redshank was shot at Shoreham, by Mr. Edward Bennett, of Western Terrace, Brighton. We have heard of a few white Woodcocks, and several that were either cream-coloured or buff. On January 1st, 1874, a pure white cock was shot near Tallow, Co. Waterford, and sent to Dublin for preservation by Mr. Williams, of Dame Street. Very rarely a white Snipe has been met with, but we have seen several that were pied or particoloured, having the quill-feathers in both wings white. In January, 1867, a keeper in the service of Mr. C. G. Elers, of Marsham Manor, Dorsetshire, shot a pied Snipe, which was described as "dun colour and white," and which is preserved in the collection of Mr. Marden, of Lyme Regis.—ED.]

Partial Melanism in the Missel Thrush.—An example of *Turdus viscivorus* has been sent to me, in which the breast and under parts are entirely black. The wings are black, edged with buff; the upper parts

a dark shade of the natural colour. This bird lived a year in the possession of my correspondent, Mr. Skinner, of River Street, N.—H. A. MACPHERSON (Carlisle).

Apparent Bird-tracks by the Sea-Shore.—At a meeting of the Academy of Natural Sciences of Philadelphia, held on October 3rd, 1882, Mr. Thomas Meehan called attention to what appeared to be the tracks of a three-toed bird in the sand near low water-mark, at Atlantic City. These tracks were of a nature that would be readily recognised by observers as bird-tracks; but while thinking of what bird could have caused them, and reflecting on the phenomenon of their being only found on the sand near low water-mark, Mr. Meehan noted on the face of the smooth, receding waves, spots where the water sparkled in the light, and he found this was caused by little ripples as the wavelets passed down over the half-exposed bodies of a small crustacean (*Hippa talpoidea*), and that the water, in passing over the bodies, made the trifid marks which had been taken for impressions of bird's feet. These little Crustacea take shelter in the sand near low water-mark, and enter head foremost in a perpendicular direction downwards, resting just beneath the surface. The returning wave took some of the surface sand with it, and then the looser portions of the bodies uppermost in the sand were exposed. Often the little creatures would be quite washed out; when recovering themselves, they would rapidly advance in a direction contrary to the retreat of the wave, and would enter the wet sand again as before, their sides being parallel with the shore. Their bodies terminate in a caruncular point which, with the position of the two hind-legs, offer a tridentate obstruction to the sand brought down by the retreating wave, and the water passing round the points made the three toe-like grooves, which resembled a bird's foot from one and a half to two inches long. The Crustacea, in their scrambles for protection beneath the sand, managed to keep at fairly regular distances from each other, and hence there was considerable regularity in the tracks, as if they had really been produced by birds. Although the author of these notes presented them as a trifle, yet it will be at once apparent that they are of great interest. Trifid impressions like these, filled with mud and the deposit then to become solid rock, would puzzle, if not altogether mislead, future observers.—*Nature*.

Habits of the Goldfinch and Grey Crow.—I can endorse Mr. Macpherson's account (p. 337) of the late abundance of the Goldfinch in Oxfordshire, from my own experience in Buckinghamshire, not far from Oxford. They were very plentiful in the "thistle season" of 1882, and I saw them as late as the 7th April last, in some abundance, feeding usually upon the seeds of the large teasel by the stream-sides. When Mr. Whitaker says (p. 337) that "instances of the Grey Crow breeding so

far north (as Warwickshire) are rare," does he not mean "south"? If not, a visit to the Hebrides, Norway, Russia, or Siberia, would doubtless induce him to alter his opinion.—H. H. SLATER (Whitley, Newcastle-on-Tyne).

Hybrids among Birds.—When writing, in reply to a correspondent, on the subject of hybrids between the Linnet and Greenfinch (p. 256), I had in my mind wild birds, not tame ones. Several have been obtained in different years at Brighton, and a few round London, in Norfolk, and elsewhere. Three have been recently mentioned in 'The Zoologist,' by the Rev. H. A. Macpherson and Mr. Hammond. I have one, if not two, which were said to have been taken wild in Norfolk, but I cannot altogether guarantee their antecedents; indeed, on looking closely, I strongly suspect that one of them is not what it purports to be, but a Linnet-Canary hybrid which had escaped and been shot. That such a conjunction is not unlikely you will agree. I have seen a Linnet-Canary hybrid in the collection of Mr. Henry Seebohm, which was shot wild near Amsterdam, but had probably escaped from a cage. As he has lent it to me, I may say that it is not the least like my bird, but Canaries vary so much among themselves that this is easily accounted for, and the parentage of both may be the same. Linnet-Greenfinch hybrids exist in the collections of Mr. Bond, Mr. Seebohm, Mr. Whitaker, and Mr. Stevenson, and probably many others. I believe none of these have been shot birds, and most of them bear evident marks of having been kept in confinement, which, as Mr. Phillips hints, might lead a sceptical naturalist to think they were tame-bred, and not really wild; but I believe an admittedly tame-bred Linnet-Greenfinch hybrid is a thing almost unknown. The marks of confinement have doubtless in all cases been produced by their having been netted alive and afterwards kept in a cage. In the bird-shows at Norwich, which are somewhat celebrated, I have never seen a Linnet-Greenfinch hybrid, but I have seen beautiful hybrid Bullfinches, which I believe were produced between the Bullfinch and Goldfinch and Bullfinch and Greenfinch. The experience of others, as regards the Crystal Palace shows, will I believe confirm this. As allusion has been made to the two Linnet-Greenfinch hybrids recorded in the 'Birds of Norfolk' (vol. i. p. 220), I may remark that one of them (recorded by my father, Zool. 1852, p. 3388) is unfortunately lost sight of; but the other, which was alive at the time of Mr. Stevenson's writing his work, is now stuffed in his collection, and shows in the most decided way the plumage of Linnet and Greenfinch, as also do those in Mr. Whitaker's and Mr. Seebohm's collections, and another which I saw some years ago at Mr. Gould's, taken, I believe, at Brighton. Mr. Stevenson's bird when alive even showed its double origin in its notes, which he informs me combined the shrill call-note of the Greenfinch with the soft trill of the Linnet. Mr. Phillips will find a great many interesting particulars in Mr. Henry Seebohm's works (especially in 'Siberia in

Europe' and 'Siberia in Asia') of the interbreeding of the Hooded and Carrion Crows, which always takes place where the breeding areas of the two meet, as in Siberia and in the South of Scotland. In the same way, Mr. Seebohm believes (Hist. Brit. Birds, part ii. p. 595) that great numbers of closely allied races and species—*e. g.* the Grey Shrike and Pallas's Grey Shrike—produce hybrids where they meet. Hybrids frequently take so closely after one or other of their parents as to be practically indistinguishable from them, as in the case of the hybrids between two species of gull, bred in Somersetshire by Mr. Cecil Smith (Zool. 1881, p. 450), or as in the case of the Hooded and Carrion Crow. On the other hand, hybrids occasionally do not exhibit the characters of either parent. I lately saw in Mr. Wm. Borrer's collection a hybrid between a Shelduck and a Wild Duck, the identity of which would certainly not have been guessed from its plumage. Another marked instance of this kind in the case of the Shelduck and one of the South-African Ruddy Shelducks has occurred in the Zoological Gardens (hybrid figured by Wolf, Proc. Zool. Soc. 1859; description, p. 442). Hybridism among ducks in confinement is a very wide field. Ducks will pair with their hybrid offspring, but hybrid ducks are not fertile among themselves.—J. H. GURNEY, JUN. (Northrepps, Norwich).

Wren utilising a Swallow's Nest.—Noticing a Wren often flying in and out of a shed last week, I found that it had adapted a Swallow's nest to its own requirements. I have known of a House Sparrow's nest being similarly used, but have not previously observed a Swallow's thus taken possession of. In my note last month on a "bold attack by a Partridge" (p. 336), for "Karlstad" read "Karlsbad."—E. F. BECHER (Southwell).

Black Guillemot in Co. Cork.—I secured a Black Guillemot, *Uria grylle*, in immature plumage, on the 21st July last, outside Glandore Harbour. The breast and under parts white, slightly speckled with greyish black; wing-coverts white. Length, $12\frac{1}{2}$ in.; wing, $5\frac{3}{4}$ in.; bill at front, 1 in.; tarsus, $1\frac{7}{8}$ in. Weight, 12 oz. Bill black; irides brown; legs dusky brown.—C. DONOVAN, JUN. (Myross Wood, Leap, Co. Cork).

[The Black Guillemot is found all round the Irish coast, and is stated by Thompson to be permanently resident.—ED.]

Variety of Redwing.—The Rev. W. Becher, of Southwell, on the 11th December last, shot a very beautiful variety of this bird, which he has kindly presented to me. It has all the ordinary markings in chestnut colour on a light cream ground, the feathers under the wings being unusually bright.—J. WHITAKER (Rainworth Lodge, near Mansfield).

Late nesting of the Nightjar.—Whilst walking across Strensall Common on August 19th, I flushed a Nightjar from the ground, whilst

sitting on one of its young, the age of which appeared to be about three days, a cracked egg from which it had proceeded lying beside it. The young bird was on the bare ground, in quite an exposed situation, its colour resembling very closely the ground on which it was placed. As the date named is unusually late for this species to have young, I should like to know whether any similar case has been observed.—W. HEWETT (York).

Blackbird building in a Waterspout.—On April 24th a nest of the Blackbird was taken out of a waterspout under the eaves of my good vicar's house, at an elevation of about 17 feet from the ground. It had successfully plugged the waste-pipe, and was full of water. The four eggs were of a normal coloration. The house stands in an old garden, with hedges and thick shrubs on every side. Nevertheless the male bird had for some weeks sung continuously on the housetop, as did another Blackbird this spring at Stannix.—H. A. MACPHERSON (Carlisle).

Sparrow imitating a Canary's Note.—I saw in a cage the other day a cock Sparrow, *Passer domesticus*, which during the winter had been rescued from starvation by an old woman of humane disposition, with the intention of letting it go when the winter was over. It had as a companion a Canary in another cage. It has now imitated so well the note and song of the Canary that it has sacrificed its liberty, for on account of its accomplishment the owner has altered her intention of freeing it.—E. F. BECHER (Southwell, Notts).

FISHES.

On the Occurrence of *Paralepis coregonoides* in Cornwall.—Mr. Dunn, of Mevagissey, as I have mentioned in my work on British Fishes, informed me that in 1869 he had obtained a fish which Mr. Couch considered to be *Paralepis coregonoides*, but as no detailed description could be found I waited to hear of another specimen before admitting it into the British Fauna. Having unexpectedly been permitted access to the late Mr. Couch's journals, through the kindness of his son, I have found the following entry, which I think affords a conclusive proof that this fish has been taken in Cornwall:—"June 2nd, 1869. I have received from Mr. Matthias Dunn a fish which appears certainly the species of which a figure is given in Griffiths' edition of Cuvier's 'Animal Kingdom,' p. 131, pl. xi. f. 3, *Paralepis coregonoides*, referring to Risso. I have taken a figure. The length of this example was ten inches, slender and moderately compressed, a mere edge along the lower portion of the body, six-eighths of an inch in depth; the upper jaw projecting an inch from the anterior border of the eye; the gape long; the lower jaw a little advanced beyond the upper; a conspicuous row of teeth along each jaw; the tongue long and narrow; eye large; from the point of the lower jaw to the border of

the gill-cover and pectoral fin two inches and a quarter. The lower border of the gill-covers of the left side overlap the corresponding portion of the right. The body is covered with moderately small scales, which were easily removed for the most part when the fish was caught. The lateral line begins even with the upper border of the hindmost gill-cover, and passes straight to the middle of the tail. The first dorsal fin begins five inches and a half from the snout, and consequently is nearer the caudal fin than to the point of the upper jaw; its posterior border incurved, as are those of the second dorsal and anal; both the last-named near the tail, their posterior portions so low as to be scarcely perceptible, and even the anterior portion of the second dorsal very slight. Ventral fins under the first dorsal; the tail rather wide, incurved, the anterior border of it above and below narrow and almost touching the lower rays of the second dorsal and anal. Where the scales remain and on the cheeks the colour is bright, with a tinge of blue, a little darker on the back, but where the scales are gone, as they are for the most part, the whole is brownish black, and along the lateral line are a series of triangular spots or marks. In its perfection the surface probably is brilliant. Mr. Dunn informs me it was found alive at Polkerris pier, and was caught with the hand; it was thought to have been wounded by another fish. He says:—"The sides presented an uniform silvery brightness, but the scales were so delicate that they at once came off on the hands when touched. When it came to me the point of the snout from the eye was injured. The eye was bright." I find in my edition of Cuvier (not Griffiths') a figure of *P. coregonoides*; that two species are figured, but the *P. coregonoides* has a particular marking on the hindmost gill-cover, not seen in my example, but this may be explained by the fact that the skin of that part was gone, and the lateral line of my example was unlike that of the other figure as copied from Risso."—FRANCIS DAY (Cheltenham).

Lamprey in the Wear.—A specimen of *Petromyzon fluviatilis* was caught in this river, near Finchale Abbey, last July. It measured about fourteen inches in length, and from its condition was evidently spawning at the time of being caught. There were from ten to twenty others in company with it. As far as I can understand, this is the only specimen which has been taken so far up the river, if taken in it at all. Dr. Tristram purchased it from the party by whom it was caught.—J. CULLINGFORD (University Museum, Durham).

VERMES.

Parasitical Worms in a Hornbill.—With this I send you some subcutaneous worms which I found in a young Hornbill—either the Elate Hornbill, *Buceros elatus*, or Black Hornbill, *B. atratus*. There were a considerable number of them, especially between the pectoral muscles.

One of the worms had eventually caused the death of the bird, as I found it in the pericardium, and there was extensive pericarditis. Some little time back I found some of the same (?) worms in a Blue-bearded Jay, *Cyanocorax chrysops*.—HERBERT LANGTON (115, Queen's Road, Brighton).

[On receipt of the specimens referred to we forwarded them to Prof. Spencer Cobbold, and invited his opinion. He has been kind enough to report as follows:—"The parasites from the Hornbill are of the species *Filaria attenuata*. Mr. Langton's 'find' is interesting, not only because no parasites have hitherto, so far as I am aware, been described from the *Bucerotidæ*, but also because, as he has informed us, one of the worms had caused a fatal result to the avian host. With the particular worm in question such an issue is certainly rare. As regards the Jay, if the worms were as long as those found in the Hornbill, they would undoubtedly be identical. In reference to the Entozoa of the larger and rarer exotic conirostral birds, little or nothing has been done. In *Cyanocorax pileatus* (Gray) an encysted Tapeworm or Ligule was long ago obtained from the muscles and subcutaneous tissues. As regards the worms obtained by Mr. E. J. Gibbins from the Red-backed Shrike (p. 345) permit me to observe that they were unquestionably those of another species—namely, *Filaria nodulosa*. Only the male worm has been properly described, and that by Schneider."—ED.]

Subcutaneous Worms in Birds.—Alluding to Mr. Gibbins' discovery of subcutaneous worms in a Shrike (p. 345), I may mention that I have found very few birds, of whose food animal life in any shape forms a part, without some kind of internal parasite, and I have been in the habit of collecting examples from all kinds of birds for years. As an instance, the Blackbird, when adult, will seldom be found to be without tapeworm, of which three, if not four, species would appear to attack it occasionally. Large *Filaria* also are found in the intestine. In addition, an adult Blackbird will nearly always be found (at least this is my experience) to have a small *Filaria* under the tendon of Achilles. All this will doubtless result from the Blackbird's fondness for pulmonate mollusca, which are such a fertile source of internal annoyance to some mammals, as well as to birds. The alimentary canal of a Kingfisher, which I dissected lately in Buckinghamshire, contained nothing recognisable but five pairs of small otoliths of fish, probably of small Dace, on which alone the digestive fluids seemed unable to act.—H. H. SLATER (Whitley, Newcastle-on-Tyne).

ARCHÆOLOGY.

Wild Geese formerly breeding in Cambridgeshire.—It would be interesting to ascertain when Wild Geese finally ceased to breed in our English fens. I have lately come across a letter which throws a little light

on the subject, and tends to prove that a wild goose of some species (said to be the Greylag) was to be found breeding in Cambridgeshire a century ago. The letter to which I refer is printed in Prof. Owen's edition of John Hunter's Essays (vol. ii. p. 321), and is addressed to Hunter by William Walcot, jun., of Oundle, Northamptonshire. It runs thus:—

“Oundle, Dec. 30th, 1790.

“Sir,—By the assistance of the servant to whom the care of our poultry is consigned, I am now enabled to give you a more particular account of the geese I some time since sent you, and which I have had the satisfaction to hear were acceptable. To the best of my recollection, it was in the summer of 1773 that I took the original goose (now in my possession) with three others (then very little goslings) in the fens between Cambridge and Ely. An old wild goose taking flight from some sedge and rushes, led me to the discovery of them. In the spring of 1774 two only remained, one having taken wing and flown off, and another having fallen by the hand of the cook; the remaining two being females, we were disappointed of a brood that year.”

The writer then goes on to state that the following year (1775) a common gander was introduced, and several cross-bred birds were reared, some of which had been sent, as above intimated, to John Hunter. These are described by Walcot as “constantly resembling the original goose, both in delicacy of shape and colour, which is that of the wild goose, with some white under the tail.” In a note appended to this letter Hunter has written, “This goose is of the sort called Gray-legs, or Rush-goose, the only one of the tribe that breeds in this country; and is the only one fit for the table.” When Pennant wrote his ‘British Zoology,’ the first edition of which was published in 1766 (the same year as the 12th edition of the ‘Systema’ of Linnæus), he remarked of the Greylag Goose:—“This species resides in the fens the whole year; breeds there, and hatches about eight or nine young, which are often taken, easily made tame, and esteemed most excellent meat, superior to the domestic goose. The old geese which are shot are plucked and sold in the market as fine tame ones, and readily bought, the purchaser being deceived by the size, but their flesh is coarse. Towards winter they collect in great flocks, but in all seasons live and feed in the fens.” It may have been a little later than this, perhaps, that the Rev. W. B. Daniel took young Wild Geese in the fens, as related in the third volume of his ‘Rural Sports’ (p. 242), published in 1807. “This species (the Greylag),” he says, “inhabits the English fens, and it is believed does not migrate, as in many countries on the Continent, but resides and breeds in the fens; they sit thirty days, and hatch eight or nine young, which are often taken; are esteemed most excellent meat, and are easily made tame. The compiler took two broods one season, which he turned

down, after having pinioned them, with the Common Geese; both parties seemed shy at first, but they soon associated, and remained very good friends." Mr. Cordeaux, in his 'Birds of the Humber District' (p. 147), refers to the Greylag as "at one period a permanent resident in our country, breeding in considerable numbers in the fens of Lincolnshire and carrs of Yorkshire," but he does not tell us when they ceased to breed there. Nor does Mr. W. E. Clarke give any information on this point in the 'Handbook of Yorkshire Vertebrates,' contenting himself with the remark (p. 53) that the Greylag "has long ceased to breed in the Yorkshire carrs, where it was formerly abundant and resident." Perhaps when Mr. Stevenson publishes the third volume of his 'Birds of Norfolk' (which let us hope will be soon) he will enlighten us as to the last breeding-place of the Greylag in the Eastern Counties.—J. E. HARTING.

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

July 4, 1883.—Prof. J. O. WESTWOOD, M.A., F.L.S., &c., Hon. Life-President, in the chair.

A. Eland Shaw, Esq. (92, Elgin Road, Harrow Road, W.), was balloted for and elected a Member of the Society.

Mr. R. McLachlan exhibited specimens of *Phylloxera vastatrix*, Planch., from the roots of vines belonging to Mr. J. E. Lightfoot, Mayor of Accrington.

Prof. Westwood remarked that he became acquainted with the *Phylloxera* in Britain as long ago as 1862, and that on November 25th, 1867, he described and figured this insect, at a meeting of the Ashmolean Society in Oxford, under the name of *Peritymbia vitisana*, which name (had the Proceedings of the Ashmolean Society been regularly published) would have had priority over M. Planchon's *Rhizaphis vastatrix*.

Miss E. A. Ormerod exhibited a bunch of *Atherix Ibis*, Fabr., found on a sprig of alder overhanging water at Hampton Court by Mr. J. Arkwright. The swarm of flies measured about 6 in. long by 3 in. broad, and consisted of many thousand specimens.

Mr. E. A. Fitch called attention to the figure of a similar swarm ('Compte-rendu,' Soc. Entom. Belg. 1874).

Mr. W. L. Distant exhibited specimens of four of the five known species of American *Fulgoridæ*, of which three were from Central America.

Mr. G. C. Champion stated that in Central America he had kept forty or fifty specimens alive for days, and had seen no trace of luminosity, neither did they stridulate. He had not infrequently found larvæ attached to and feeding on the white cottony secretion so abundant about some of the smaller *Fulgoridæ*; he had found as many as three larvæ attached to one imago.

Prof. Westwood commented on the great interest of this last announcement, remarking that the three cases of lepidopterous parasitism on the *Fulgoridæ* already recorded by him (Trans. Ent. Soc. Lond. 1876, p. 519; 1877, p. 433) occurred on eastern species.

The Secretary, on behalf of Mr. G. Lewis, exhibited the types and material used by Dr. Sharp for his memoir on the Japan *Pselaphidæ*. Also the specimens on which Mr. Lewis has founded his new species of *Lucanidæ*, and which will be figured in the 'Transactions.' Another box was also exhibited containing twenty-four male examples of *Cladognathus inclinatus*, Motsch., showing the large and small forms with various connecting links.

Dr. D. Sharp communicated a "Revision of the *Pselaphidæ* of Japan." These consist of sixty-seven species assigned to seventeen genera, nine of which are peculiar to Japan.

Mr. G. Lewis communicated a paper "On the *Lucanidæ* of Japan."

Prof. Westwood and Dr. F. Leuthner made some extended remarks on this memoir and on Mr. Lewis's exhibitions.

Mr. P. Cameron communicated the "Descriptions of sixteen new species of parasitic *Cynipidæ*, chiefly from Scotland."

Prof. Westwood read a "Further notice concerning the Fig Insects of Ceylon."—E. A. FITCH, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

On the Gapes Disease in Gallinaceous Birds, and on the Parasite which causes it. By PIERRE MÉGNIN. 8vo, 23 pp., with two coloured plates. London: West, Newman & Co. 1883.

THERE exists amongst gallinaceous birds, especially amongst the young of from one to six months old, a serious malady in the form of an epidemic known as "gapes" (from its chief symptom, a frequent yawning or gaping), and this malady, as many game-preservers know to their cost, is very frequently fatal. Various conjectures have been made as to its cause and origin, and various remedies, or so-called remedies, have been prescribed by keepers; but until lately no really satisfactory and scientific researches on the subject have been carried out.

It has, of course, long been known that the disease is caused by parasitical worms which attach themselves to the trachea, and which by preventing the passage of air, cause death by suffocation. But these parasites had not been traced through their earlier or embryonic stages, and there was still a good deal to learn about

them, when Lord Walsingham, in the interests of sport, as well as of science, in July, 1879, offered two prizes for the best essays comprising complete life-histories of the entozoic parasites to which the disease called "gapes" and the "grouse-disease" have been attributed. The Council of the Entomological Society was asked to award the prizes, and one of the two received essays on "gapes" is that by Dr. P. Mégnin, the well-known French helminthologist, which, in an English dress, is now before us. We say in an English dress, because in the year following the announcement of the competition—namely, in 1880—Dr. Mégnin published his treatise in the 'Bulletin de la Société Zoologique de France,' from the pages of which we had just commenced a translation of the essay for publication in this journal, when we learnt that an English version was already in progress, or at least in contemplation. Having read it in its original form, and having now glanced over the English translation, we lose no time in recommending its perusal to all naturalists and sportsmen who may read these lines.

They will not find it by any means dry or unprofitable reading; for the essay discloses a very singular state of things, which has been brought to light by the patient research of Dr. Mégnin, and places in a clear light all that has been hitherto ascertained in regard to the life-history of *Syngamus trachealis*, as this curious entozoic parasite is called.

The accompanying plates, on which are coloured figures of the entozoa magnified, and a section of the trachea of a Pheasant as it appears with the parasites attached, enable one to form an excellent notion of the nature of the disease, and of the serious consequences to the birds which are attacked by it.

The attacks are not confined to Pheasants, for it appears that *Syngamus trachealis* has been discovered in the tracheæ of the Magpie, Swift, Starling, Green Woodpecker, Partridge, and Black Stork, as well as in various breeds of domestic poultry.

After tracing its life-history, Dr. Mégnin points out the various modes in which the disease may be spread, and concludes by detailing several modes of treatment. Every sportsman who rears Pheasants should procure a copy of this essay and discuss it with the head-keeper. If experiments are then made next "hatching out" season, it would be interesting to receive reports of the results obtained.

Transactions of the Norfolk and Norwich Naturalists' Society.
Vol. III., Part 4. Norwich: Fletcher & Son. 1883.

It was not without good reason that the President of this Society, Mr. H. D. Geldart, at the annual meeting held at Norwich in March last, congratulated the members on the very flourishing state of the Society. He was able to announce a steady increase in the number of members, useful additions to the library, and the exchequer in a satisfactory condition. He might have gone further, and congratulated the members upon the excellent quality of the papers which are periodically printed in the Society's 'Transactions,' a circumstance which, it must be admitted, contributes very materially to the stability of the Society.

In the part before us we have an exceptionally good number, containing papers not merely of local interest, but important contributions to general Zoology.

It has long been known that many of the lower animals contain granules of chlorophyll, and it has been found that this chlorophyll, tested by the spectroscope, is chemically identical with the true chlorophyll of green leaves, and several theories have been advanced to account for the presence of these green bodies in such animals as *Hydra viridis*, and *Spongilla*. One theory is that the green bodies are true chlorophyll granules; another that they are not produced by the animals themselves, but are parasites; and a third that in the Protozoa, at all events, they are merely portions of vegetable organisms which have been absorbed. Mr. Geldart selected this theme for his Presidential Address on the occasion above referred to, and in the part of the 'Transactions' now before us will be found his *résumé* of the observations of Herr Brandt and Mr. P. Geddes, communicated to the Physiological Society of Berlin and the Royal Society of Edinburgh respectively, embodying an instructive account of the most recent investigations on this subject.

In this same part, also, Mr. Geldart has an original paper on Marine Algæ, forming Part X. of the "Fauna and Flora of Norfolk." Most of the sea-weeds collected on the Norfolk coast, it seems, are water-borne, and often show by their condition that they have come from a considerable distance, few if any rocks being accessible, even at the time of the lowest tides. It is to this cause that Mr. Geldart attributes the absence of a good

many conspicuous species of Algæ which might otherwise be fully expected to occur.

“The Scenery of Norfolk” and “Additional Notes on its Springs and Spas” are the titles of two papers by Mr. H. B. Woodward, in the former of which, extending over twenty-six pages, the writer considers—(1) the geological influences which have affected the form of the ground; (2) the physical geography, including the modifying influences of rain, rivers, and sea on the land in recent times, and the introductions of the forms of life, without which the scenery would be bare and uninteresting; and (3) the artificial features of the country consequent upon the changes wrought by man in all directions. To zoologists this paper will be interesting for the notice which it contains of the extinct animals of Norfolk, and to the former denizens of the great forest, chiefly of firs and yews, which at one time covered a large portion of the area of the North Sea. The Bear, the Glutton, many remarkable Deer, the Rhinoceros, Hippopotamus, Beaver, two (if not three) species of Elephant, and other mammals, have left their remains, says Mr. Woodward, to tell the tale of the former inhabitants of the Pleiocene period.

Of recent and existing mammals Mr. Southwell is the chronicler in the current number of the Norfolk ‘Transactions.’ In a paper on the Beaked or Bottle-nosed Whale (pp. 476—481) he shows that *Hyperoodon latifrons*, Gray, is identical with *H. rostratus*, the commonest of the three species of ziphioid Whales which have been met with in British seas. Capt. Gray, who has had great experience as a whaler of these animals, and who, in 1882, killed no less than 203 of them, is of opinion that the great differences observable in the skull and external appearance of these whales are sexual, and are gradually assumed as maturity is reached. They are very difficult to kill, and dangerous to approach without great caution when wounded; and Capt. Gray has known them to run out 700 fathoms of line, and to remain under water for two hours. After this salmon-fishing would seem child’s play!

In another paper contributed by Mr. Southwell (pp. 482—503) will be found an interesting account of the operations of the sealers in Greenland, with statistics concerning the past and present distribution of the northern Seals, and some notice of their habits. The five species of Seal chiefly hunted in the northern seas are the Common Seal, the Ringed, the Greenland

(Harp, or Saddle-back), the Bearded, and the Hooded (or Bladder-nosed) Seals. The Grey Seal has occurred in the Greenland seas, but is not known to the sealers.

It is satisfactory to know that a "close time" for Seals has been enforced by legislation for the last five years, and that, in the opinion of experienced sealers like Capt. David Gray, it has been productive of good, although it would seem that many years must elapse ere the Seals recover from the effects of the cruel and short-sighted way in which they have been hunted down.

With such observant ornithologists in the county as Messrs. Stevenson and Gurney (*père et fils*) it is no wonder that the records of Norfolk birds are well kept. In the present number Mr. Stevenson continues his annual series of "Ornithological Notes," which are supplemented, in a separate article, by Mr. J. H. Gurney, jun.

Mr. Stevenson also has an article on the occurrence of the Dusky Shearwater, *Puffinus obscurus*, Gmelin, in Norfolk, an event which was first announced by him in 'The Zoologist' for 1858 (p. 6096). Having recently had an opportunity of re-examining the specimen, which has, fortunately, been preserved, he is able not only to confirm the opinion which he formerly expressed as to its true species, but to add a careful description of the plumage, instituting at the same time a comparison of its dimensions with those of *Puffinus anglorum*, our common Manx Shearwater. The specimen in question was found by a game-keeper on the Earsham estate, near Bungay, in April, 1858. It is curious that the only British—in fact, the only European—specimen of another rare Petrel (*Procellaria hæsitata*) was similarly procured in Norfolk in March or April, 1850, when it was picked up on a heath at Southacre, near Swaffham. And now, in the number of the 'Transactions' before us (p. 474), Mr. Southwell records the occurrence of the Sooty Shearwater, *Puffinus griseus*, Gmelin, at Lynn, in July, 1851. This bird Mr. Southwell purchased alive, and kept for some days in his garden until it died, when it was preserved for the Lynn Museum. It seems not improbable that *Puffinus griseus* has been mistaken (as it was at first by Mr. Southwell) for the young of the larger white-breasted *P. major*, and perhaps it is not so rare in British waters as has been hitherto supposed.

Those who keep cage-birds would do well to read Mr. John

Young's account (pp. 519—524) of the habits of the Bearded Tit in confinement as observed by himself. He has kept these birds alive for many years, and has had several nests made and eggs laid at different times, though no young birds were hatched.

Mr. E. Bidwell (p. 526) gives a long list of birds in whose nests the egg of the Cuckoo has been found. No less than eighty-six species are named, amongst the most remarkable being the Dipper, the Rock Thrush, Fieldfare, Ring Ouzel, Jackdaw, Magpie, Jay, Swallow, Ring Dove, Stock Dove, Turtle Dove, and Little Grebe (!). It would have added much to the value of Mr. Bidwell's list if he had given the particulars relating to the most uncommon foster-parents, for although such details may perhaps be found elsewhere, many of them would have to be looked for, at some inconvenience, in publications not accessible to the general reader. Two cases of young Cuckoos in Swallows' nests have been recorded in 'The Zoologist' (1869, p. 1866; 1877, p. 260), but we should like to have the history of the Cuckoo's egg in the Little Grebe's nest. It is difficult to conceive that the young bird could be reared by such a singular foster-parent, by whom, with intentional kindness, it would be almost certain to be drowned. This leads us to enquire whether any of our readers have been able to observe the fate of young Cuckoos hatched in Reed Warblers' nests over water. Everyone knows that the Reed Warbler's nest is very commonly visited by the parent Cuckoo. In the case of Wagtails, Pipits, and other small birds whose nests are on *terra firma*, it is also well known that the young Cuckoo quits the nest before it is able to fly, and may be seen at some distance from it being fed by its foster-parents. But what happens when the nest is over water? Is the young Cuckoo so good a climber that it can get ashore without the aid of its wings, or does it continue to be fed in the nest until well able to fly? One would expect, under the circumstances, a higher rate of mortality amongst young Cuckoos so situated than amongst their more favoured relatives on dry land.

Transactions of the Essex Field Club. Vol. III., Part 1. Published by the Club, Buckhurst Hill, Essex. 1883.

DURING the last twenty years we have become aware of the promotion in various parts of the country of a great number of

Field Clubs and local Natural History Societies; we have watched their progress, and have perused with interest their published 'Transactions' as they have appeared. Some have succeeded from the first, have been energetically supported by practical naturalists, and have printed papers of permanent value. Others, although possessing a larger number of members, and enjoying facilities for reference to public libraries and museums in the towns of their birth, have never risen above mediocrity, and have published little that was worth printing.

We have no hesitation in placing the Essex Field Club in the first category; for although of comparatively recent foundation (1880) it has already established a reputation, and takes a leading position amongst local Natural History Societies. Two volumes of 'Transactions' have been published, and the first Part of Vol. III. is now before us.

Of this Part 152 pages are devoted to original papers by members of the Society and 80 pages to the journal of proceedings at ordinary, field, and other meetings, besides two Appendices; so that the annual volume, as may be supposed, is one of no mean proportions.

The contents are of a tolerably varied character. In the present part we find an excellent account of the ancient fauna of Essex, by Dr. Woodward, with ten illustrations; a list of the Macro-Lepidoptera around Maldon, by G. H. Raynor; a paper on Dene-holes, by T. V. Holmes; Mr. Meldola's Presidential Address on Modern Evolution; an obituary memoir of the late Sir Antonio Brady; a paper on Primæval Man in the Valley of the Lea, by Worthington Smith, with twenty-four woodcuts; and another on the species of the genus *Primula* in Essex, by R. M. Christy. In addition to these there are a number of shorter papers, all of more or less interest to specialists.

The Journal of the Society contains, amongst other things, a full record of its proceedings in relation to the conservation of Epping Forest, in regard to which the Essex Field Club (mainly through the instrumentality of its energetic Honorary Secretary, Mr. W. Cole) played a very effectual part. These local records will some day form an important chapter in the history of Epping Forest.

Z.D

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THIRD SERIES.

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[No. 82.]

AN AUTUMN VISIT TO SPITZBERGEN.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

IN the autumn of last year (1882) I paid a second visit to Spitzbergen. The contrast, not only between the midnight sun of the first voyage and the dark nights of the second, but more especially between the teeming millions of birds seen during the first and the few isolated stragglers which had ventured to brave for a few weeks longer than the mass of their congeners the inclement climate of a Spitzbergen autumn, seen during the second, was so striking, that I may perhaps supplement my former paper (Zool. 1882, pp. 321, 378, 404) on a summer voyage to Spitzbergen, by giving some account of what was to be found in that country towards the close of the season.

M. Charles Rabot, a French gentleman,* and I chartered the walrus-hunting smack (or, to be strictly accurate, "jagt"), the 'Cecilie Malène' (gross tonnage 40, length between uprights 58 feet), Captain M. E. Arnesen, of Tromsø, and weighed thence in tow of a steamer, as it was dead calm, late on the evening of August 26th.

August 27. Temperature,† 8.30 p.m., atmospheric pressure 750·2, air 53° 42' F., surface water 51·8 F.—During the morning, as we were towed and afterwards sailed out of the sounds, saw a

* Chargé d'une Mission Scientifique par le Ministre de l'Instruction publique de France.

† The temperature was taken by M. Rabot. I have left the readings of the atmospheric pressure in mètres and decimals, as he recorded it; the temperature of the air and water I have reduced from centigrade to Fahrenheit.

few Black Guillemots and Herring Gulls, one or two Greater Black-backed, and I think a few Common Gulls. When nearly clear of L'uglö, on port side, and Arnö, to starboard, began to see Fulmar Petrels, two or three Puffins, and an occasional Kittiwake. Directly we had cleared the north point of Arnö, we began to pass numerous Fulmars, a few Puffins (generally in twos or threes), and Kittiwakes. During the evening Fulmars were decidedly numerous; we saw probably two or three hundred or more. Kittiwakes generally in parties of from two to three up to seven or eight. As we passed the Indre- and Ydre-Gjøesbøen Shoals we saw a flock of several thousand gulls on each, apparently Kittiwakes; they were probably feeding on Coal-fish, *Merlangus carbonarius*, Cuvier. About five whales seen during the day, probably all Sibbald's Rorquals; the last was rather a large one, and we could hear him blowing distinctly when more than a mile off. One of the others kept putting its nose right out of the water. Twice during the afternoon a Purple Sandpiper flew close round us, and seemed desirous to come on board, as if, perhaps, tired after migration from Spitzbergen.

August 28. Lat. at noon, $71^{\circ} 21' N.$, long. $20^{\circ} 0' E.$ of Greenwich. Temperature, 0.15 p.m., press. 749.6, air $53.24^{\circ} F.$, surface water $50.36^{\circ} F.$; 7 p.m., press. 748.9, air 50.72° , water 49.1° ; 11.40 p.m., air 51.8° .—Arnesen saw a large "Blaa Hval" (probably Sibbald's Rorqual) early in the morning, about lat. $70^{\circ} 55'$. Kittiwakes, almost all adults, in twos and threes, and sixes or sevens, flying past us all day, as directly south as they could fly, though swerving a little out of their course to see if there was anything to be picked up from the smack, and then resuming their course. Wind light all day from about S.E. A few Fulmars, but not perhaps above two dozen all day. A pair of Puffins in the afternoon were no doubt *Fratercula arctica*. In the evening we heard what we took to be Guillemots (Common or Brünnich's) calling to their young, apparently an adult and young on each side of the smack.

August 29. Lat. at noon, $72^{\circ} 25' N.$, long. E. G. $19^{\circ} 8'$; press., noon, 749.9.—From 8 a.m. blowing fresh from N.E. Arnesen called my attention to a bird swimming near us, which somewhat resembled a young Guillemot, except that it appeared to be dusky black all over. I could not satisfy myself as to its identity. A few Fulmars and Kittiwakes during the day.

August 30. Lat. at noon, $72^{\circ} 55' N.$, long. E. G. $15^{\circ} 47'$.—The wind shifted to N.W. this morning, still blowing very fresh. A few Fulmars were the only birds I noticed. In the evening squalls and sleet showers. Blowing half a gale during the night.

August 31.—Still blowing hard, with sleet at intervals, all day. A solitary Puffin and a few Fulmars were the only birds observed.

September 1. Lat. at noon, $74^{\circ} 45'$, long. E. G. $16^{\circ} 20'$. Temperature, 2 p.m., press. 750·9, air 32·9, water 34·34; 8 p.m., press. 752·9, air 30·56, water 34·34.—The wind fell about 4 this morning. Sighted Bear Island, bearing S.E., about thirty-two miles, about 8. Arnesen saw a "Blaa Hval" an hour later, and shortly afterwards we got up to much drift-ice. Had to turn first W. and later to S.W. to get round the riband of ice. About 3.30, just as we reached the westernmost point of the ice, we saw a "Blaa Hval" close to the ice, and the spout of one or more just beyond. Half an hour later we turned N.W., but the light air from the east failing, we had to lower a boat, and tow the "jagt" away from the ice. Saw during the day a good many Fulmars and Kittiwakes, about a dozen Arctic Terns, two or three dozen Little Auks, six or eight Guillemots (most likely Brünnich's), a good many Glaucous Gulls (mostly young of the previous year), and several Skuas (all, I believe, white-breasted Richardson's).

September 2. Lat. at noon, $74^{\circ} 42'$, long. E. G. $15^{\circ} 50'$. Temperature, 2.45 p.m., press. 752·5, air 33·8, water 37·4 (= Gulf-stream).—Calm continued; drifted a little southwards. An occasional Fulmar, now and then a Kittiwake, and during the forenoon I saw one Brünnich's Guillemot flying about north. While Arnesen was playing his accordion on deck in the evening a Puffin, *Fratercula glacialis*, as if attracted by the music, flew two or three times round the vessel, and finally settled in the water close to us, and remained there for a long time.

September 3. Lat. at noon, $75^{\circ} 27'$, long. E. G. $16^{\circ} 47'$. Temperature, 2 p.m., press. 751, air 35·6, water 32·9; 8 p.m., press. 749·5, air 33·8, water 32·36.—A S.W. breeze sprang up at 2 a.m. and continued through the day. At twenty minutes past noon saw a whale spouting two or three miles off on our starboard quarter, and immediately afterwards a smaller whale (the "Blaa Hval" again)—forty feet long or so, at a guess—crossed close under our stern, within gun-shot. Two hours later, saw a pair of Skuas, which were possibly *Stercorarius longicaudus*, but I could

not be certain. A good many Fulmars and Kittiwakes during the forenoon. Two or three Richardson's Skuas; no Glaucous Gulls; three Brünnich's Guillemots together, one being a young bird, and two or three more of this species afterwards; a few Little Auks during the day.

September 4. Lat. at noon, $76^{\circ} 27'$, long. E. G. $19^{\circ} 5'$. Temperature, 8 a.m., press. 749, air 33.08 , water 30.92 ; noon, press. 749, air 35.96 , water 30.92 .—At 3 a.m., Syd Kap, Spitzbergen, sighted; at 4 it bore N. four miles. A good deal of drift-ice about, and one veritable berg—computed by Arnesen to be thirty or forty feet above the water—passed us some distance off to starboard, coming from the east side of Spitzbergen. We passed close to a piece not less than ten feet above the water, and all sizes less than this. As our object was to attempt to reach Hope Island, in hope of "fangst" ("game" perhaps gives the English equivalent of the word, or, in the case of amateur hunters like ourselves, "sport"), our course now lay to the east. We had to tack once or twice to avoid pack-ice, and at 4.45 p.m. went about to W. by S. to avoid the pack, and half an hour later, a fog having come on,—so thick that we could not see the length of the vessel in any direction,—we laid her aback, and she slowly drifted in an E.S.E. direction. At 8 p.m. we had to make sail again, to avoid the pack to the S.S.E. of us, and then, at 11 p.m., laid her aback again. A few Fulmars, Little Auks, and Kittiwakes during the day. We steered during the greater part of the day E., to about long. $21^{\circ} 50'$, when we encountered the pack trending about N. by W., S. by E.

September 5. Lat. at noon, $77^{\circ} 10'$, long. E. G. $20^{\circ} 50'$. Temperature, noon, press. 753.5, air 32.36 , water 28.76 ; 0.45 p.m., full sunshine, press. do., air 33.62 , water do.; 8.25 p.m., press. 754.5, air 31.82 , water do.—A real Arctic summer's day. At 3 a.m. sailed N. by W.; at 4 turned N.N.W. for eight miles; at 6 altered our course to about N. by E. Edge Island, otherwise known as Stans Foreland, was sighted about 8 a.m., Whale Point being the first headland seen, and shortly afterwards Negro Point (= Black Point). Half an hour later Hope Island was sighted. The true position of this island has been ascertained (by, I think, Graf Wilczek) to have its southwesternmost point in N. lat. $76^{\circ} 29'$, long. E. G. 25° , instead of the position further to the N.E. in which it appears in the charts.

On the authority of Kjeldsen, one of the ice pilots from Tromsö, who was with us in 1881, most of the islands off the south coast of Edge's Land are rather vaguely placed on the chart; Halfmoon Island should be where Menke Island is shown, King Ludwig Islands should be immediately south of the assigned position of the Arendts Islands, &c. We kept along the edge of the pack all the forenoon, sailing among drift-ice, some of it of a heavy description. We found Hope Island and the Thousand Isles lying well inside the pack, which extended westwards to about the twentieth degree of east longitude up to about eight English miles south of Whale Point, whence it trended away to the west, filling Stor Fjord as far as could be seen from the "crow's-nest." Saw one young Mandt's Guillemot in the forenoon, the first example of that species seen this voyage; also saw in the course of the day one Northern Puffin, two Richardson's Skuas, two or three each of Glaucous Gulls and Kittiwakes, several Fulmars, and two or three dozen Little Auks; one *Phoca barbata* and about eight or nine *P. hispida*. We sounded when Whale Point bore north half east by compass about twelve miles (English), and found twenty-three fathoms (= 140 feet), soft, rich brown mud—so soft that the lead, a small light one, stuck very tight in it. Sounded again about about two English miles nearer Whale Point, and found twenty-seven fathoms, same bottom. It was impossible to land anywhere on this coast, as the ice was about eight miles broad all along it and quite compact, though rotten at the outer edge, so that one could not cross it on foot. It is, of course, possible that, if we had waited, the ice might have eventually shifted sufficiently to allow of our advance; but time was precious, as we were anxious to deliver the mail we had on board to the Swedish Meteorological Expedition at Cap Thordsen in Is Fjord, on the west coast. We therefore reluctantly decided to stand to the west and make for the east coast of Spitzbergen proper. We could see King Ludvig's Islands and the highest cliff of Negro Point, over a local fog, until long after we had headed west, but Hope Island was only visible for a short time early in the morning, and was soon hidden by fog. So much of the coast of Edge Island as we saw lies high; the King Ludvig Islands lie low.

September 6. Lat. at noon, $76^{\circ} 58'$, long. E. G. $18^{\circ} 10'$. Temperature, noon, press 752, air 32.9 , water 32.36 .—Snow fell soon after midnight. Early in the morning Arnesen saw four young

Mandt's Guillemots, and in the middle of the day I saw one adult example, the first seen this voyage; a few Fulmars and Kittiwakes, but did not notice any Little Auks to-day. In the afternoon a young Kittiwake came flying about the ship, and finally settled on the deck. M. Rabot, who came on deck at the moment, gave chase, and presently clapped his sou'wester over it. We cut its wing and deposited it in the "fangst-baad" which lay in-board. Fog all day, so that though we were only (on the average) about ten English miles off the east coast we saw nothing of the land until about 9 p.m., when it was visible for a few minutes, and again about an hour later, when South Cape became visible. During the first part of the afternoon there was a slight thaw, and every rattle of the rigging brought down showers of ice; later on rain fell and lasted through the remainder of the afternoon. We met two floes and much loose ice during the morning, but got gradually clear of it as we proceeded south, though an occasional large piece of fresh-water ice was still met with, and we nearly ran into a large black piece about 10.30 that night, which caused no little excitement for a few minutes, as we mistook it in the darkness for a rock. Three or four Ringed Seals passed during the day.

September 7. Lat. at noon, $76^{\circ} 48'$, long. E. G. $15^{\circ} 10'$. Temperature, 2.20 p.m., press. 743.6, air 33.24, water 33.8.—We doubled South Cape just after midnight, and altered our course; soon afterwards the wind freshened to a half-gale from N.E. by E. until 4 a.m., when it fell light. The young Kittiwake was found dead this morning, having evidently been in a bad way before it settled on the deck and allowed itself to be captured. Rain nearly all the morning. We were opposite the entrance to Horn Sound about 5 p.m. Wind very light from N.N.W.; a long swell from the west showed that a westerly wind was blowing further out in the North Atlantic. Early in the morning Arnesen saw plenty of Eider Ducks and young and Brent Geese and young, the latter species being close alongside. During the afternoon Kittiwakes were very numerous, hovering close astern, and several flying right over the deck. A little to the north of Horn Sound saw about eight Geese, probably Pink-footed, flying southwards. Later on three or four Eider Ducks flying in company; a Fulmar or two almost constantly in sight. One Ringed Seal seen in the afternoon. The rain stopped between 4 and 5 p.m., and the sun came out, making things much pleasanter.

September 8. Lat. at noon, $77^{\circ} 12'$, long. E. $G. 14^{\circ} 50'$. Temperature, noon, press. 736.2, air 35.6, water 35.24; 8 p.m., press. 737, air 35.6, water 35.6.—This morning found us slowly working our way north, with a light S.S.W. wind. We were opposite the south side of the entrance to Bell Sound about 1 p.m. Light rain and fog all day. About 8 p.m., while I was below, a bird was observed swimming, and presently dived out of sight, which our harpooner pronounced to be an "Imber" (*i. e.* a Great Northern Diver), a new bird to the Spitzbergen list. He was quite confident it was not a "Lom" (*i. e.* the Black-throated or Red-throated species), being so much bigger, and adding, as it were in self-defence, that he knew the bird well from seeing them so often in Norway. The Red-throated is the only species of *Colymbus* hitherto recorded from Spitzbergen. M. Rabot saw the bird, and confirmed the harpooner's description of it. Saw during the day a single example of each of Richardson's Skua, Brünnich's Guillemot, and Puffin, and a few Kittiwakes and Fulmars, but not many. No Little Auks.

September 9.—Entered Is Fjord early in the morning, and anchored in Green Harbour 8.30 a.m., and found about seventeen Norwegian smacks, sloops, &c., anchored there, engaged in cod-fishing. A Skua which I saw at this time looked like *S. longicaudus*, but I could not be sure. I went off with Arnesen and two men, by boat, to look for Johan Dreyer, of Tromsø, who had established himself with two other men in a hut constructed of a boat reversed, at a point called Russe Kjøeler, near the entrance to the Fjord; he was not there, however, and we heard afterwards that he had been taken off by a vessel a few days before our arrival. On our way we passed a great many boats from the various smacks busily engaged cod-fishing. Arnesen had charge of numerous letters to members of their crews, and we visited some of the smacks to deliver them; others were given to the men in the boats; one skipper gave Arnesen four large codfish, just caught, in exchange for a letter from his wife. Soon after starting I caught sight of a pair of Loms (*Colymbus*) close in to the west shore; they allowed us to get tolerably close, and I believe I wounded one, but before I could fire the second barrel the bird flew off in a straight line from the bow of the boat, and as I was rowing *three* I could not fire without killing the man rowing bow, and by the time the boat's head was turned a little to one side it

was too far off for my shot to be effectual, which I much regretted, as I thus failed to add a new species to the list of birds killed in Spitzbergen, for I am quite confident these were Black-throated Divers, and the harpooner, who was rowing bow, was, independently, of the same opinion. His remarks *à propos* of the present birds helped to strengthen my belief that he was correct in his identification of the bird he saw the day before as a Great Northern Diver. Some short distance further on we came to a pair of Red-throated Divers, one of which I succeeded in bagging. On subsequently visiting the 'Isbjörn,'* to deliver some letters, her captain (Steenersen), seeing it lying in the boat, remarked that it was not an "every-day (*i. e.* common) capture" (= *en hverdagsfangst*), but that he himself shot one (presumably this species) the week before, but had eaten it. We saw and heard several more Divers subsequently during this day's excursion. I do not know the difference in the cry of the different species, but believe that at least a pair which were flying at a considerable height over us, when ashore near the mouth of the Fjord, were Black-throated. Fulmars were plentiful as we rowed past the smacks; I secured a couple of adult specimens, the second of which we tried to capture with a bent pin and piece of string, and should no doubt have succeeded if we had had a tougher bait than cod-liver, which would not hold to the pin. Finally, frightening it to a more respectable distance, I killed it with a charge of small shot. The sandstone rocks near the point of the promontory called the "Fort" (= *Festning*), certainly deserve the name, looking exactly like an artificially-built fort of masonry. A small low-lying rock off the Fort was completely covered with Kittiwakes and Arctic Terns: after a search I discovered one immature specimen among the latter, so shot it, killing a Kittiwake at the same discharge. We landed first on the eastern side of Cape Staratschin, and looked for fossils and plants. I collected a good many of the latter, but found hardly any fossils, and no birds, but saw tracks of foxes on the snow two or three times. We therefore returned to the boat and rowed a good bit further west. We landed again

* The well-known sloop in which Graf Wilczek made his pioneer voyage in connection with the Tegetthof Expedition; and in which, later, Captain Markham and Sir Henry Gore Booth made the voyage an account of which was published by the former as 'A Polar Reconnaissance.'

just beyond the mouth of a little river, and made for a fresh-water lake lying at some distance—perhaps an English mile—inland (something like eight miles from the anchorage where the smack lay). We again found no birds, but an unlimited quantity of sub-fossil marine mussel-shells of two species, of which the larger was the commoner. I do not think I am exaggerating in saying that a great many of these lay 100 feet, or even more above the present level of the lake, which again is—I am afraid to guess how high above the present level of the sea, but it must, I think, be more than *one* hundred feet. These masses of shells which lay above the level of the lake had not, I think, attained that position by the upheaval of the land, but by being washed there, perhaps in quite recent times, by the overflowing waters from the lake at the time of the melting of the winter's snow, as they were deposited at all levels, up to the height guessed at, on the sides of the river-bed. They had, of course, reached the bed of the present fresh-water tarn before that was raised out of the sea. In the shallow water at the edge of the lake, where it flows into the river, we saw two or three small fish. We had, unfortunately, no hand-net with us, and all our efforts to secure either of them were in vain. The largest was about six inches long, or hardly so much; the smallest would be perhaps two inches and a quarter. I believe the only fresh-water fish known in any part of the Arctic regions are species of *Salmo*. These looked to me rather *deep* for such small specimens of *Salmo*, but did not get a sufficiently distinct sight of them to be able to form any opinion. We followed the course of the little river back to the coast. On the beach at this point the harpooner found two pieces of hard stone with a surface perfectly planed and polished by the action of ice. On the way back, at a place where the cliffs were not more than a dozen feet or so high, we landed at a miniature coal-mine cropping out in the cliff-face; a little vein of coal, about a yard or less broad by not more than four or five feet deep, and rather less than a yard from the surface. The coal, of which I have specimens, is very soft and crumbly, and can only be quarried in the shape of small-coal. A boat's crew from one of the smacks at anchor in the harbour landed here, as we were leaving, to replenish their stock of fuel. I was told that on the east shore of the harbour, opposite to where we then were, excellent coal may be obtained in large lumps. There is coal for some distance along the west side,

but not of good quality, this little vein' being probably the best. Kittiwakes were tolerably numerous during the day in places; a few Glaucous Gulls, most being immature, one of which the harpooner shot with his rifle; no Guillemots (either species), Puffins, or Little Auks; one or two Richardson's Skuas; two or three Terns, besides those on the Skerry previously mentioned. Saw several Purple Sandpipers and shot one, as I could not clearly identify it. Eiders very few and far between, but I saw one party of several dozen ducks flying; no drakes seen. On a conspicuous headland inside the Fort there is now to be seen a small cross of iron, erected by the Swedish Expedition a few weeks previously, and underneath it the inscription, "På Konang Oscar II.'s Foranstalande"—i.e. "by direction of King Oscar II." When in smooth water inside the Fort, in about two fathoms, took a sweep with the dredge, but only captured one small shrimp and a few tiny snails, &c. M. Rabot went this day in the other boat in the opposite direction, up the harbour, and had unsuccessful shots at some very tame Arctic Foxes, and also at a great Seal. He shot a young Mandt's Guillemot, an Eider Duck and three ducklings, an Arctic Tern and a Purple Sandpiper, and slightly wounding another brought it on board alive, where we kept it for about a couple of days, until it disappeared either overboard or down the hold. He and his boat's crew saw a bird which one of the seamen believed to be a Greenland Eider (= King Eider). He obtained some red snow from a mountain which he ascended. In the evening we went off again in a boat, and after a haul of the dredge, which produced two small Lump-suckers, two *Echini*, a few small shrimps, star-fish and tiny snails, we proceeded up the harbour to the site of the old Russian house. Presently a splash quite close to the boat showed where a Ringed Seal had come up, but discovering the boat so close popped down again at once. Saw several Purple Sandpipers. Ashore were several barrels not headed up containing "beef" of bear, reindeer, and seal-flesh. Pieces of wood, &c., lying on the beach were at this time (about 9.30 p.m.) slightly frozen to the ground. We recognised the mountain to which this beach forms the foreground as the one figured, in the 'Voyage of the Vega,' as "a Reindeer pasture, Green Harbour" (vol. i. p. 136). With the exception of a big lump or two floating in the offing, there was no ice whatever in the bay at this time—perfectly open water.

September 10. Temperature, 11 p.m., air 32°.—We weighed about 2 p.m., the sails being then all frozen; the wind came tolerably fresh from the west, but at 4 it suddenly dropped round to the N.E., causing us to beat slowly up the Fjord. Saw two or three young Mandt's Guillemots close to the ship, three Puffins, and an occasional Fulmar and Kittiwake. In the afternoon saw a Brünnich's Guillemot and young, and there may have been a second couple. Our progress being very slow, Rabot went off to the coast in the boat, and took some photographs. He shot a Glaucous Gull, and saw numerous Skuas.

September 11. Temperature, 0.30 p.m., press. 761.4, air 28.58, water 38.84.—Cold N.E. breeze; all day beating up towards the Middle Hook, on our way to visit the Swedish Meteorological Expedition, and take them their last batch of letters and newspapers. M. Rabot and I each secured a young Mandt's Guillemot. Two (or more) others were seen, and an occasional Fulmar; one Puffin. I did not, I believe, see a single Kittiwake to-day. One Ringed Seal in the afternoon.

September 12.—Although the house at Cap Thordsen had been visible for a short time at 10 a.m. on the 11th, we only anchored off there about 1.15 this morning. Soon after 8 we landed. The landing-place is simply an open beach, opposite a cleft in the low cliff which forms the background (about 164 feet high), and a very awkward place in bad weather, as we found out before we again set foot on the 'Cecilie.' On the top of the cliff is a large storehouse overflowing with supplies of every kind, including tons of provisions generously sent out by Mr. Oscar Dickson for the use of Mr. Leigh Smith's party in case they had retreated that way, and of whose safety we had the satisfaction of informing the Swedes, the news having reached Tromsø just before we sailed, coming from Hammerfest, where the schooner chartered by Sir Allen Young to assist the 'Hope' in her search for the 'Eira's' crew had returned some days after the 'Hope' had reached Scotland. From here to the dwelling-house the ground gently rises, and a tramway between the two buildings—a distance as the tram runs of about one mile 260 yards*—facilitates the

* In the notice of this visit which appeared in the 'Proceedings of the Geographical Society,' December, 1882, the distance, by some error, is called "nearly four miles."

transporting of stores. On our way up we met with great numbers of Snow Buntings. Behind the house the ground rises abruptly to low Fjeld, averaging about 820 feet. The Swedish Meteorological Expedition had not intended to establish themselves here (N. lat. $78^{\circ} 28' 27''$, long. E. G. $15^{\circ} 49' 30''$), but at Mossel Bay (about N. lat. $79^{\circ} 50'$ and long. E. G. 16°), but, as has been already recorded in various publications, the two gunboats under the command of Capt. Palander, which brought out the Expedition, were prevented by the ice from rounding the N.W. point of Spitzbergen. This house has a curious and melancholy history, which it would take too long to narrate in detail, but is briefly as follows:—It was built in 1872 by a company started in Göteborg for working the coprolites which abound here. A very large quantity of materials and stores were sent out, and a party of workmen (two of whom were even accompanied by their wives). On setting to work, however, they found it impossible to work the stone, in consequence of the ground being so hard-frozen,* a fact which one would have thought might have been ascertained in ten minutes, before they had gone to the expense of bringing out all this material. The scheme was abandoned, and the men returned home, leaving the house and stores behind them. Four “fangst” vessels lay fast in the ice off Grey Hook (on the north coast) that autumn, and seventeen men belonging to them left in boats and made for Cap Thordsen, knowing of the house and stores there, and not knowing that the people had left. One of the vessels subsequently got away, and brought home all the remaining men, with the exception of the captain and cook of one of them, who chose to remain—but only to die during the winter. Three relief expeditions were organized for the rescue of these men, the second vessel to go being the ‘Isbjörn,’ commanded by Kjeldsen, with Halvorsen, our harpooner of the ‘Cecilie,’ under him. They failed, however, to penetrate to Cap Thordsen, and nothing was known of the unfortunate men until the following June, when the late Capt. Mack, of Tromsö, landed there, and found two men buried at some distance from the house, fourteen lying dead just outside the door, and the last survivor (a Sea-Lap) seated at the table indoors, but also long since dead. Mack buried the fifteen bodies in one large grave

* The present expedition found the ground frozen in August at ten centimètres (less than four inches) below the surface.

close to the house, and placed over it a board with the inscription, "Her under hviler Stovet af 15 Mand, som døde her Foraaret 1873. Fred med eders stov"—*i. e.* "Hereunder rest the remains of fifteen men, who died here in the spring of 1873. Peace with their remains." We were received with the greatest hospitality by the members of the Expedition, and spent a most pleasant day with them, in this the only inhabited house in all Spitzbergen, and inspected the observatories, &c. The Swedes had brought with them two pointers, six tame Lapland reindeer (one of which had been killed for the table before our visit), three pigs, and twelve pigeons, one of which last had disappeared a few days previously, and as Arnesen and some of the crew of the Expedition while standing near the dovecot in the afternoon observed a falcon stoop at one of the pigeons, which the men saved by shouting and waving their arms, the fate of the lost pigeon may be conjectured. An Arctic Fox had taken up its abode under the house, and seemed to consider itself quite under the protection of the Expedition. Observations began on August 15th, except with the anemometer and anemoscope, which yet remained to be fixed at the date of our visit. The spot chosen for these, on the Fjeld behind the house, is 826 feet above the sea level, and about 570 yards distant from the house. The astronomical observatory is about 280 feet and the magnet-house about 240 feet above the sea. Observations are taken every hour, the watches of the observers being—from 1 a.m. to 4 a.m.; 5 a.m. to 8 a.m.; 9 a.m. to 2 p.m.; 3 p.m. to 8 p.m.; 9 p.m. to 12 p.m. The thermometer cage contains two wet and two dry thermometers, one Saussure's hygrometer, and one evaporimeter. The anemometer is by Robinson, and marks with an electric register made by Herr Andrée, one of the members of the Expedition, at Cap Thordsen. The International Circumpolar Expeditions of Denmark, Russia, Germany, Holland, Austria, and Sweden have similar instruments, by Edelmann, of Munich. Some distance west of the house Lieut. Stjernspetz and I, while taking a walk in the afternoon, found a large whale's rib, partly imbedded in shingle about forty feet above the present high-water mark. We saw a few Fulmars along the coast, and several Pink-footed Geese, a young specimen of which the Lieutenant shot, the others keeping well out of reach. Cast-horns of Reindeer were lying about in numbers; I picked up and kept a few of the best met with. After an excellent dinner we took

charge of numerous letters to be posted on our return to regions where such an institution exists, and finally started for the coast by express train, accompanied by some of the members of the Expedition. It was a strange sensation to rattle along so fast down hill, in the darkness of night, on an Arctic coast, where the hard frozen ground made everything reverberate to an astonishing extent. On arrival at the lower end of the tramway it began to snow, and we had some difficulty in attracting the attention of the watch on board, as, besides being very dark, it was now blowing a gale directly on shore, so that when at length the boat came for us it was impossible to bring it close in to the beach, but it was backed in on the breakers as near as was practicable, and we had to make a run for it through the surf, one at a time, and tumble into the boat as best we could. We arrived on board at 11.30, and the smack was rolling so heavily that before we could secure the boat she was stove as she hung at the davit falls. Shortly afterwards the smack took to rolling so heavily as to take in water over the deck on each side in turn.

September 13. Temperature, 9.20 a.m., press. 753.8, air 33.8, water 37.4.—The snow storm continued through the night and until nine in the morning, by which time, the weather having moderated, the snow was lying about six inches deep on deck. We got under weigh as soon as possible, running up our flags and firing a parting salute in return for a salute from the shore. Wind E.N.E. fresh, to start with, and in spite of various shifts, including a calm, we gradually advanced up Sassen Bay and anchored that evening in the snugest situation that offered, a good way in on the south side. The noise of the cable running out disturbed a Diver, which was, I have no doubt, of the Red-throated species.

September 14.—Landed with two seamen for Reindeer hunting. An hour's row brought us nearly to the head of the Fjord, where we hauled the boat up. After only about three-quarters of an hour's walk we saw seven deer on the upper terrace of the raised beach on the south side of a big valley which runs up from the head of the Fjord; however, we made a mess of our stalk by overshooting the mark, and they escaped. Almost immediately afterwards we caught sight of a covey of ten Ptarmigan running ahead of us (we had previously seen some while we were stalking the deer); I exchanged my rifle for my

shot-gun, which one of the sailors was carrying, and followed them. Upon this they stopped and allowed me to shoot five, singly, and one of the seamen one with his rifle, in a most unsportsmanlike and cold-blooded manner; but then, while I was fumbling in my pockets for cartridges, the remaining four suddenly took wing. What made them start just then I hardly know, unless the fate of the other members of their family had just dawned upon them. We followed the spor of the deer, and after a bit found they had divided into two parties of four and three. We followed the four, as they included the best animals, and finally I secured the biggest buck (I guessed him to be four years old, total length 62 inches), the seaman who was armed with a rifle getting a smaller buck (supposed two years old, and measuring 59 inches). On our way back to the coast with the deer we came to a single Ptarmigan sitting. It allowed me to put down my load, put a cartridge in my gun, and "pot" it, without making any effort to escape. Just before we reached the boat we saw a pair of ducks with one young one on the shore edge; they took to the water and swam away before we had got close, and the men, on whom had fallen the chief share of carrying our spoils, were too tired for me to insist on giving chase in a direction exactly contrary to that in which the smack lay. During the time of getting the boat into the water and embarking ourselves and the game, I stupidly did not give these ducks a second thought, but when, some time later, I did think about them again, I was convinced that they were not Long-tailed Ducks, as I had at the time supposed them to be, as they were neither Common nor King Eiders, and the Long-tailed Duck is the only other duck known in Spitzbergen; nor were they anything like that species. On talking about them to one of the seamen who was with me I found him quite confident that they were not the "Havel" (= Longtailed Duck), but he did not know any name for the species. After our return to Tromsø I met this man in the Museum, and he tried to find the duck he meant, but unfortunately without success, but he was still equally sure that the specimens of Long-tailed Duck were not what he wanted. My own impression is that they were Velvet Scoters, *Ædemia fusca* (Linn.). This opinion was formed when I got back to the Museums of Norway, and confirmed when, on my return to England, I had access to books, and while the subject was still

tolerably fresh in my mind; but as it was not come to on the spot, and as it is a species, and even genus, entirely new to Spitzbergen, though common in Lapland and the north of Scandinavia generally, on the authority of Mr. Richard Dann (quoted by Yarrell, 'Brit. Birds,' iii. p. 316, 3rd edit.), and Dresser says it is "common in Northern Russia and Novara Zemlya," I do not wish to do more than mention the case for what it may be worth. A good many Fulmars were about the bay; one or two Glaucous Gulls; two or three Eiders. Much spor of large web-footed birds, probably Geese and Glaucous Gulls, in the snow all about the low ground near the sea, but no Geese seen until we were in the boat on our return journey, when a "skein" flew by, no doubt Pink-footed. A few young Mandt's Guillemots. Saw one Seal on our way back, probably a Ringed Seal, though it looked dark, like a Great Seal, of which species it may have been a young one. On arrival on board I found M. Rabot already returned; he had made the ascent of a mountain with one of the seamen, where the snow was so deep and soft that they had been obliged for some distance to go on all fours. I am afraid I should have hardly thought it worth the trouble.

September 15.—Just after I got out of bed this morning the Captain sent down word that there was a bird alongside which I ought to shoot. Hastening on deck, I shot a young Richardson's Skua, in mottled brown plumage, the only one seen during the voyage. Rabot and I went off Reindeer hunting, each taking one of the boats. Arnesen, one of the men, and I rowed some little way up the bay, and landing went above and behind the valley in which we had killed the deer the day before. Just after we landed we saw three Divers flying, but could not tell the species. We soon saw three deer,—buck, doe, and calf,—but they kept walking, hardly lingering at all, and we tried in vain to get up to them. At last, leaving the seamen to watch them, the Captain and I went down to lower ground to try and head them off. We noticed that three foxes in company had run heel on our tracks of yesterday, along a river-bed, scenting the Reindeer-blood. After a stiff scramble we succeeded in getting up to the deer, and I shot the buck and doe right and left; Arnesen then shot the calf. The buck, which I supposed to be three years old, measured 60 inches in total length, the doe 58 inches, and the calf (female) 45½ inches. The latter's horns were just showing through the skin, barely

three-quarters of an inch. To-day, after carrying our spoil on our backs some distance, the snow allowed of our dragging them—a much pleasanter way, I need hardly mention. On the way back saw a large flock of Snow Buntings, but they would not let me get a shot at them. No Ptarmigan seen to-day, but their tracks (probably yesterday's) were all about the big valley. We dragged the deer to the nearest point of the coast, and then fetched the boat to the spot. Though this was only a distance of some few hundred yards, we found as we approached that an adult Glaucous Gull was already helping himself to venison, and did not trouble himself to hurry his departure. Soon after starting in the boat on our way back we saw a trip of about fourteen geese flying; their tracks, as yesterday, were common on the snow in the big valley. M. Rabot reported having seen a Diver (*Colymbus*) and a Puffin to-day.

(To be continued.)

ON A RARE AFRICAN PLOVER.

BY THE EDITOR.

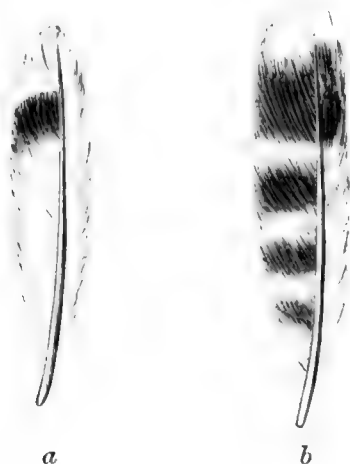
WHEN staying at Leiden in May, 1870, for the purpose of examining the collection of *Limicolæ* in the fine Museum d'Histoire Naturelle des Pays Bas, I took sketches and descriptions of several rare species, some of which were at that time unique. Amongst others I particularly noticed a Ringed Plover which was labelled "*Charadrius indicus*, Latham; Nipaul, Hodgson." Turning to Prof. Schlegel's excellent Catalogue of the Museum (*Cursores*, p. 25) I found the specimen duly entered as "*Charadrius indicus*, Latham, nec Rüppell," with the remark, "*Habite l'Inde Continentale. Adulte, Nipaul, présenté par Mr. Hodgson*," a description with measurements being added. The specimen had long been unique, and remained so for many years subsequently; none of the Indian ornithologists being able to verify its existence in Nipaul, or to meet with it in any part of Continental India.

The reference made by Latham to Pennant's 'View of Hindostan,' 1798 (vol. ii. p. 159), throws no light on the question of habitat. Pennant's words (*l. c.*) are:—"The Golden Plover, Brit. Zool. ii. no. 208, is found here [Hindostan] from the very arctic

regions. The Indian Plover, Latham, vii. 254 [Gen. Syn.] does not exceed the size of a Lark."

These facts, coupled with its close resemblance to a better known African form, *Ægialitis tricollaris*, suggested to me the idea that there was an error in the locality assigned to it, and that if ever the species were rediscovered it would probably be found in some part of Africa.

The description of this specimen I noted as follows:—"Resembling *Æ. tricollaris* (Vieillot), but rather larger; bill rather more robust, and tarsus longer, 1.3 in. instead of 1.1 in. General coloration similar, but no white on the forehead. Two narrow black pectoral bands. Primaries dusky, as in *tricollaris*. Tail-feathers twelve; the two centre ones (as in *tricollaris*) the same colour as the back; the outer one on each side conspicuously



different; that in *tricollaris* having a single dark spot, or bar, on the inner web; that in *indicus* (so called) having four such bars on the inner web (lighter and smaller as they approach the base), and a single spot on the outer web of the same feather towards the extremity, as shown in the annexed cut, *a* and *b*. Base of bill and legs light-coloured, but the colour not determinable with certainty."

That the specimen in the Leiden Museum had been presented by Hodgson was doubtless true enough; but the mistake as to locality probably arose from assuming that, because it came from Hodgson, it must have been collected by him in the country with which his name has been so long and favourably associated. The

fact seems to have been overlooked that well-known collectors are frequently in the habit of receiving from their friends specimens from all parts of the world.

In the 'Catalogue of the Specimens and Drawings of Mammalia and Birds of Nepal and Thibet' presented by Hodgson to the British Museum, and printed by order of the Trustees in 1846, no mention of this Ringed Plover is to be found*; and there can be no doubt that, had Hodgson procured it himself, it would have been certain, from its dissimilarity to all other species of *Ægialitis* found in India, to have attracted his particular attention, and to have found a place amongst his beautiful drawings of birds now in the British Museum. It may therefore be stated with some degree of certainty that the specimen of "*Charadrius indicus*, Latham," so called, in the Leiden Museum, although received from Hodgson, then resident in Nipaul, was not procured by him in that country.

Who, then, identified this specimen with *Charadrius indicus*, Latham? Was it so identified correctly? and was Latham's type procured in India, as the specific name bestowed by him would imply? These are some of the questions which require elucidation in any attempt to unravel the history of the bird before us. It was probably Temminck who identified Hodgson's specimen with *indicus* of Latham, and ornithologists can scarcely be blamed for having accepted until now without hesitation the opinion of so able a predecessor.†

I myself certainly accepted this identification until the acquisition of a second specimen of the bird, under circumstances presently to be noticed, afforded me an opportunity of a further examination of the questions at issue.

Latham's description of his *Charadrius indicus*, in his 'Index Ornithologicus,' 1790 (vol. ii. p. 750), is very brief:—

"*Charadrius fuscus*, subtus albus, pectore fasciis duabus fuscis, rectricibus basi albis. Habitat in India. Magnitudo *Alaudæ*. 6 poll. longus."

* A second edition of this Catalogue was printed in 1863, but contains no reference to the species in question.

† In 'The Ibis' for 1867 (p. 165) Blyth wrote—"Both Mr. G. R. Gray and I have in vain sought to identify *Charadrius indicus* of Latham (nec Rüppell)."

This description, as well as that in the Supplement to his 'General Synopsis' (p. 254), and 'General History of Birds,' vol. ix. p. 343 (1824), is based on that of Brisson, given in the second volume (p. 234) of his 'Ornithologia' (8vo ed. 1763), which runs as follows:—

“Pluvialis minima indica.”

“*Pluvialis* superne fusca, inferne sordida alba; summo pectore duabus tæniis transversis fuscis distincto; primoribus remigibus fuscis, cæteris nigricantibus; rectricibus in exortu albis, versus extremitatem fuscis.

“Le petit pluvier des Indes.”

“Cum *Alauda* crassitie fere convenit. Ipsius longitudo 6 pollices æquat. Rostrum 9 lineas longum est; cauda $2\frac{1}{2}$ pollices; pars crurum plumis denudata 11 lineas; digitorum medius 9 lineas, extimus 7 lineas, intimus omnium brevissimus. Extremitates alarum $5\frac{1}{2}$ pollicum intervallo distant; alæ complicatæ ad extremam caudam extenduntur. Rostrum pedesque nigricant. Habitat in India Orientali.”

This description of a small two-banded Plover, although applicable to no species known to inhabit India at the present time, applies in part to the specimen labelled *indicus* in the Leiden Museum. But it is evident that that is not the species to which the description was intended to refer, for the bill and feet are described by Brisson as dark, and the tail-feathers white at the base, dusky towards the extremity. Now, if Brisson had had before him the specimen now at Leiden, the distinctly barred tail would not have escaped his attention. On the colour of the bill and feet too much stress, of course, cannot be laid, for we know that a considerable alteration of colour often takes place in the process of drying, and in the course of years. Yet it is noticeable that the legs of the Leiden specimen are still light-coloured, notwithstanding so many years have elapsed since it was procured, while Brisson expressly states that his bird had dark legs.

Now, Von Heuglin, who met with *Æ. tricolor* in pairs on rivulets along the Abyssinian coast, and procured specimens, has described the legs and feet as “greenish grey” (*Ibis*, 1859, p. 345), a colour which would become much darker in drying.

Bearing this in mind, and considering that Brisson's description of the tail-feathers, though not so exact as it might be, will apply generally to *Æ. tricoloris*, Vieillot, it seems most probable that this was the species he had before him. It may well have come from the Red Sea shore (as did the type of Rüppell's *indica*), and have been supposed (like many other things which came from the East formerly) to have come from India. It would seem, therefore, that Rüppell in designating a specimen of *tricoloris* from North-East Africa *Hiaticula indica* (Syst. Uebers. Vög. N. O. Afr. p. 118, 1843), correctly applied the specific name which Latham had adopted from Brisson.*

Prof. Blasius, then, was right in the view which he expressed when he wrote ('Ibis,' 1861, p. 295):—" *Ægialitis indicus*, Bris. = *tricoloris* (Vieillot), introduced with a score of other species into the European list by Bonaparte and Brehm merely on supposition, on the ground of the possibility of its occurrence."

Lesson identified *indicus*, Latham, with *tricoloris*, Vieillot, but gave priority to the name *bitorquatus*, which he claimed to have himself bestowed upon the species (Man. d'Orn. ii. p. 320).

There can be no doubt that *Charadrius bitorquatus*, Lichtenstein, is identical with *tricoloris*, Vieillot, the description given by Lichtenstein (Verz. Doubl. Mus. Berl. p. 71), as follows, applying unmistakably to that species:—

"Ch. fuscus, fronte superciliis et corona occipitali albis, gutture albicante, abdomine albo fascia pectorali duplici atra; rectricibus lateralibus albis macula média fusca versus internas sensim majore, intermediis duabus totis fuscis. Rostrum basi flavicans. Long. $6\frac{1}{2}$ '. Tars. 10". Cap. B. Sp."

Lefebvre, in the 'Voyage en Abyssinie,' published under the auspices of the French Government (1845-1850), includes amongst the birds collected by the naturalists to the Expedition (MM. Petit and Dillon), and drawn from life or from recently-killed specimens by their artist, Vignaud:—

"*Le Pluvier à double collier, Charadrius indicus*, auctorum,

* Blyth considered *Hiaticula indica*, Rüpp., identical with *tricoloris*, Vieill., but supposed *indicus*, Latham, to be a different species.—'Ibis,' 1867, p. 170, note. This also is the view taken by Prof. Schlegel (Mus. Pays. Bas. *Cursores*, p. 24).

C. bitorquatus, Wagler.* Nos. 36 et 282.† Petit Pluvier à collier, à bec et paupières rouges. Rapporté d'abord de Gondar par Dillon, en Mai, 1840. Retrouvé ensuite à Adoua en Mai et Juillet, 1841, au bord de l'Assan. Assez commun au bord des rivières et dans les prairies après la saison des pluies; à l'Adoua surtout; rase l'eau et se pose au bord sur les pierres ou il s'agite en relevant et baissant brusquement la tête comme tous les pluviers.

“D'après le dessin de Vignaud fait sur le vivant, les paupières de cet oiseau sont en effet rouge vermillon; la moitié du bec, à partir de la commissure est rouge orange; le surplus noir; enfin les pattes sont d'un carminé légèrement brun, et les ongles noirs” (*op. cit.*, pp. 150, 151).

In the Appendix to this volume (p. 179) an additional note on this species runs as follows:—

“Dans le Journal de Petit cet oiseau avait été d'abord classé par lui sous le no. 173 comme *Chevalier*, et on y trouve cet note qui accompagnait un dessin qu'il avait fait de la tête et du cou de cette espèce, et que nous reproduisons textuellement:—J'ai fait le dessin sur l'individu sec envoyé de Gondar par Dillon; en le retrouvant plus tard en Mai 1841, à Adoua, je ne le reconnus pas d'abord, et le classai sous le nom de Pluvier à collier et à paupières rouges, sous les numero 282 (voir à ce numero le dessin refait par Vignaud sur l'individu frais). Ce dessin, de grandeur naturelle, est de la plus parfaite exactitude, et ne ressemble en effet en rien au premier qu'en avait tracé Petit sous le numero 173. La comparaison seule de ces deux dessins fait voir l'importance et la valeur de ceux faits sur le vivant.”

The citations from the above-mentioned authorities (and others might be added‡) serve to show that many ornithologists have concurred in referring the description given in 1790 by Latham (*ex* Brisson) of *Charadrius indicus* to *Charadrius tricoloris*, Vieillot, described (Nouv. Dict. d'Hist. Nat. xxvii. p. 147) in 1818. The correctness of this identification being admitted, it

* Wagler ('Systema Avium,' 1827. *Charadrius*, no. 30) adopted the name bestowed by Lichtenstein, *bitorquatus*, adding as a synonym, *tricollaris*, Vieillot.

† The numbers on the tickets of the specimens collected.

‡ In Layard's 'Birds of South Africa,' p. 296, *indicus*, Lath., is given as a synonym of *tricoloris*, Vieill.

would follow that, according to the law of priority, Latham's name for the species should have precedence were it not for the erroneous habitat which would be assigned to it in perpetuity by his specific name.*

This leads us to consider the geographical range of *tricollaris* before proceeding to enquire into the history of the species in the Leiden Museum, which appears to have been erroneously identified with Latham's *Charadrius indicus*.

Tricollaris would seem to be generally distributed over a large portion of the African continent. Von Heuglin, Finsch, and Hartlaub include it amongst the birds of North-East Africa, although according to Capt. Shelley it has not been observed in Egypt. Rüppell found it common along the Red Sea shore; and Lefebvre, Jesse, and Blanford all give it a place amongst the birds of Abyssinia. Sir John Kirk has reported it from Zanzibar, where it was found in Elephant Marsh, on the Shiré River ('Ibis,' 1864, p. 332). Prof. Peters has received specimens from Mozambique; and Messrs. Pollen and Van Dam, and Dr. Hartlaub all testify to its presence in Madagascar.† Further to the south, Mr. Ayres procured specimens on the muddy banks of creeks amongst the mangroves in Natal ('Ibis,' 1865, p. 271), and Mr. Layard has described it as common throughout the Cape Colony, "frequenting equally the sea-shore, the natural vley, artificial dam, or river." He found it abundant in the water-holes of the Karoo rivers, as well as on the coast, and identified it with the "sea-cow bird" of 'Chapman's Travels in South Africa' (Append., p. 371), the constant attendant of the Hippopotamus.‡ In Damara Land, and Great Namaqua Land, Andersson found it similarly dispersed, both inland and along the shore, and generally in small flocks; and turning to the 'Ornithologie d'Angola' (1881, ii. p. 433), by Prof. Barboza du Bocage, we find it stated that this bird occurs on the coasts of Benguela, Angola, and

* As to the appropriateness of Vieillot's name for the species, it may be observed that it is less appropriate than *bitorquatus*, bestowed by Lichtenstein in 1823; for the bird is really a "two-banded," and not a "three-banded" Plover, Vieillot's third band being merely the narrow white streak between the two dark bars which cross the breast.

† The Rev. W. Deans Cowan also has more recently procured it in Madagascar.

‡ See Gurney in Andersson's 'Birds of Damara-land,' p. 275, note.

Loango. It thus appears to have a considerable range, but we are not sure whether it has been found north of the Equator on the west coast. There is no evidence of its occurrence in India, as suggested by Brisson and Latham, nor does it appear to have been met with further eastward than the Red Sea. At the same time it might well be expected to occur in the Gulf of Aden, and along the southern coast of Arabia.

We have now to consider the position, scientifically, of the bird which is preserved at Leiden under the name *indicus*, Latham. If, as has been shown, it is not *indicus*, which is identical with *tricollaris*, what is it? and whence comes it if not from India? It cannot be said to be undescribed, for it has been described by Prof. Schlegel (*Mus. Pays Bas., Cursors*, p. 25), by Blyth ('*Ibis*,' 1870, p. 175), and by Capt. Shelley ('*Ibis*,' 1872, p. 293; and 1875, p. 382); but while the two first-named authors distinguished it from *tricollaris*, they identified it with *indicus*, Latham, which they imagined to be a different species; and Capt. Shelley, who at first mistook it for *tricollaris*, its nearest ally, subsequently applied the name *indicus*, in the belief that it was the bird described by Latham under that name.*

It is to Capt. Shelley, indeed, that ornithologists are indebted for having rediscovered the species, so to say, and ascertained its true *patria*, which we now know to be West Africa. In Feb., 1872, while on a visit to the Gold Coast in company with an equally enthusiastic sportsman and naturalist, Mr. T. E. Buckley, the latter shot a solitary specimen of this bird, the only one seen, on some rushy ground at Cape Coast Castle. Until that date Hodgson's specimen in the Leiden Museum was believed to be unique.

Capt. Shelley's description of the soft parts ('*Ibis*,' 1875, p. 382), as being taken from a freshly-killed specimen, is important. He describes it as—"Rather larger than *tricollaris*, Vieil.; has the tarsus very considerably longer, has no white forehead, and has on the outer tail-feathers an additional dark bar. [He should have said *three* additional bars.] The eyelids

* It was probably by a slip of the pen that Capt. Shelley, in quoting the authority for the name *indicus*, wrote "Lesson" instead of "Latham" ('*Ibis*,' 1875, p. 382); for Lesson did no more than adopt as a synonym in 1828 (*Man. d'Orn.* p. 320) the specific designation which had been bestowed by Latham years previously, namely, in 1790.

and legs were, when fresh, of a clear pink, and I believe the base of the bill was also of that colour; but unfortunately no note was made to that effect at the time. The irides were dark brown."

It is not unlikely that the specimens from Senegambia, the Gold Coast, and the Gaboon, referred to by Von Heuglin (Orn. N. O. Afrikas, ii. 1029), and the specimen in the Hamburg Museum, procured at Elmina by Weiss, and on the Gaboon, as recorded by Dr. Hartlaub (Orn. W. Afr. p. 217), may prove to be examples of the same species. Quite recently it was procured on the Niger by the late Mr. W. A. Forbes, whose untimely death in January, 1883 (at Shonga, a station some 400 miles up the Niger below Rabba), has been deplored by all zoologists. I am informed by Capt. Shelley, who is engaged in working out the collection of birds sent home by Forbes, that it contains a single specimen of the hitherto so-called *Charadrius* (or *Ægialitis*) *indicus*.

Having shown that this name, however, is inapplicable to the species (being referable to *tricollaris*, Vieillot), and having shown also that the bird does not come from India, as supposed, but from the West Coast of Africa, it is desirable that it should be now re-named, in order to obviate any further misconception concerning it; and since it would appear to be the West African representative of the more widely distributed *tricollaris*, inhabiting the country watered by the Niger and its tributaries, I propose to name it *Ægialitis nigris*.*

The distinguishing characters of the species have already been noted (p. 410), and need not be here repeated. It only remains to endeavour to unravel some of the confusion which exists in regard to the synonymy, giving only the more important references, thus:—

ÆGIALITIS TRICOLLARIS (Vieillot).

Charadrius tricollaris, Vieillot, N. D. d'Hist. nat. xxvii. p. 147 (1818).

„ *indicus*, Latham (*ex* Brisson), Ind. Orn. ii. p. 750 (1790).

„ *bitorquatus*, Lichtenstein, Verz. Doubl. Zool. Mus. Berl. p. 71 (1823); Wagler, Syst. Av. Charad. no. 30 (1827); Lesson, Man. d'Orn. ii. p. 320 (1828)

* The practice of naming species after individuals is not to be commended, and now-a-days has become so common that it has almost ceased to convey a compliment. Were it otherwise, no one would be more deserving of such a compliment than Capt. Shelley, who may be said to have rediscovered the present species, and who has done so much to advance our knowledge of African Ornithology.

- Hiaticula indica*, Rüppell, Syst. Uebers. Vög. N. O. Afr. p. 118 (1843).
 „ *tricollaris*, Gray, Gen. B. iii. p. 534 (1844-49).
Charadrius indicus, Lefebvre, Voy. en. Abyssin. Ois. p. 150 (1845-50).
Ægialitis indicus, Heuglin, Syst. Uebers. p. 56 (1856).
 „ *cinereicollis*, Heuglin, *l. c.*
 „ *tricollaris*, Hartlaub, Orn. W. Afr. p. 216 (1857); Orn. Madagasc. p. 72 (1861).
 „ *tricollaris*, Blasius, Ibis, 1861, p. 295.
Charadrius tricollaris, Schlegel, Mus. Pays. Bas. Cursores, p. 24 (1865); Layard, Birds S. Afr. p. 296 (1867); Finsch. & Hartlaub, Vög. Ost. Afr. p. 655 (1870).
Ægialitis tricollaris, Blanford, Zool. Abyss. p. 429 (1870); Andersson, Birds Damara-land, p. 274 (1872); Harting, Proc. Zool. Soc. 1874, p. 457, pl. lx. (egg figured); Bocage, Orn. d'Angola, ii. p. 433 (1881); Holub & Von Pelzelu, Beitrage zur Orn. Süd. Afr. p. 240 (1882).

ÆGIALITIS NIGRIS, Harting.

- Charadrius indicus*, Schlegel, Mus. Pays Bas., Cursores, p. 25 (1865), *nec* Latham; Blyth, Ibis, 1870, p. 175, *nec* Latham.
Ægialitis tricollaris, Shelley, Ibis, 1872, p. 293, *nec* Vieillot.
 „ *indica*, Shelley, Ibis, 1875, p. 382, *nec* Latham.

Some uncertainty still exists with regard to *Æ. cinereicollis*, Heuglin. He himself, in 1873, referred it to *tricollaris* (Orn. Nordost. Afr. ii. p. 1027), but in 'The Ibis' for 1860 (p. 430) he wrote:—"This species is very closely allied to *Æ. tricollaris*, but smaller and different, *especially in the tail-markings*." This seems to indicate that he had the two species before him from North-East Africa, of which the smaller *cinereicollis*, "found singly at mountain pools and streams in Abyssinia," would be *tricollaris*, Vieillot, as were all the specimens brought home from Abyssinia by Messrs. Blanford and Jesse which I have examined.

This leaves it at present uncertain how far *Ægialitis nigris* penetrates towards the east of the great African continent. It would be of interest to examine specimens from the Gaboon, where the two species would be expected to meet, but where at present, according to Dr. Hartlaub, only *tricollaris* has been obtained.

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

By March 14th numbers of adult Sea-mews, *Larus canus*, mostly in pairs, had assembled in our harbours *en route* for their breeding quarters. This Gull, I am glad to say, appears to have become more plentiful within the last few years; but "Common Gull" is still I fear rather a misnomer, at least on this part of the coast. I examined a nice male Lesser Spotted Woodpecker, killed in the neighbourhood of Plymouth; the stomach contained small white maggots or grubs with very black heads. On March 19th I observed the last Black Redstart of the season at the Devil's Point, Stonehouse. Notwithstanding excessively cold easterly winds, Mr. Brodrick, of Chudleigh, informed me that he saw Wheatears near Haldon on March 22nd, but I did not observe them at Plymouth until the 30th of the month. On one occasion, some years ago, I met with a Wheatear on Dartmoor as early as March 6th.

In April Lesser Black-backed Gulls were numerous in pairs, and in full breeding-plumage. On the 11th of that month the nest of a pair of Ravens which breed annually at Bovisand, near Plymouth, was visited, and found to contain two young birds almost ready to fly; and a friend informed me that some Cornish Choughs were nesting near Bude, which I am glad to say were left unmolested. On April 19th a female Hoopoe was obtained at Saltash, near Plymouth; and I heard of another which had flown on board a ship at sea, but left for the shore on nearing Portsmouth; the stomach of the Saltash specimen contained the skins of caterpillars or grubs of beetles; the eggs in the ovary were much advanced.

On May 1st I observed many birds at a distance on the West mud-banks of the Tamar, which I felt sure were Whimbrels, and the day after I heard their notes. By the 4th a small party of Common Sandpipers, *Tringa hypoleucus*, were seen on the rocks at Stonehouse; wind N.E. and very cold." On the same day an adult male Ring Ouzel was killed in the neighbourhood. Swifts were seen on the 8th, and as late as the 12th (strange to say) a couple of Brent Geese were sent in the flesh to a local birdstuffer. Whimbrels by that date were plentiful, and I examined one

which was killed by flying against a telegraph-wire; several were brought to a Stonehouse birdstuffer on the 19th, together with a male Nightjar, as well as a pretty pied variety of the Rook, and a pure white Robin, both young.

On June 15th, in company with two friends, Messrs. Brooking Rowe and W. S. M. D'Urban, I visited the breeding-place of the Herring Gulls at Wembury, but found that the nests must have been sadly robbed; for we could only perceive a few young birds and a single egg, where on former occasions I have seen numbers of both. I have since been told that some persons had previously visited the place almost daily for a fortnight, endeavouring to pull up the young ones with a stout cord and hook, or something of the kind, and appear to have been tolerably successful, as a friend of mine who happened to be fishing on the Yealm, just off the cliffs, saw them haul up two or three young birds not nearly able to fly. He then thought it time to put a stop to their fun by rowing in and giving them a bit of his mind on the subject, upon which they actually pretended to have been perfectly ignorant of the Sea Birds Act, and only wanted a few young gulls for their gardens. This is not all, for I understand that the farmers' boys of the neighbourhood frequently lower themselves by ropes to take both eggs and young. It is a great pity that such wanton destruction of bird-life should not be stopped, as the number of breeding gulls appears to be getting less every year, and the farmers themselves take care to shoot or trap every Peregrine that ventures near the cliffs in which they used annually to nest. The only other breeding-place for the Herring Gulls near Plymouth is at Rhame, on the Cornish coast. I was told by a man who is in the habit of shooting gulls and other sea birds, and on whom I think I can depend, a singular incident concerning this colony of breeding gulls. Last summer, as he was fishing off the Rhame Head, he was astonished to see these gulls actually diving in the water just off their breeding-place, and after remaining under for several seconds, would immediately fly with what they had caught to their nests and young on the cliffs; and so astonished was he at seeing gulls dive, that (as he expressed it) he "could scarcely believe his eyes," and pulled his boat in to satisfy himself of the fact; they were swimming about and diving just like sea ducks, but did not remain under water half so long. He thought they must have been diving after some small fry

swimming not far from the surface. I think what he said must be true, but I must say that I myself have never seen gulls dive.

On the day I visited Wembury a specimen of the Pomatorhine Skua was brought to the Stonehouse birdstuffer, which had been killed near the Manacles off the coast of Cornwall. It was a young bird of last year, and in very interesting plumage. The person who shot it said that he saw it attack and rob several gulls, which it ultimately frightened away. In order to bring the skua within shot he flung out several fish, but it would not deign to touch them. After flying round for a long time, however, he managed to get a chance, and brought it down. I do not remember having seen a specimen of this skua on our coast at this time of the year before, but there had been some very severe gales from the north for several days previously. The same person told me that on one occasion he saw a Shearwater (?) actually kill a small Gull on the water.

On June 22nd I examined a male Storm Petrel which had been knocked down and killed by a Herring Gull when flying about in the Great Western Docks at Plymouth. The Gull knocked it down twice, and when picked up by a man in a boat it was found that the top of its skull was quite bare from the force of the blows. The stomach was empty; the testes much enlarged. On the 24th the entrance of the harbour was full of gulls, and I observed upwards of two hundred resting on the rocks of Drakes Island and as many more settled on the water, feeding on shoals of small fry, with almost the same number flying round and constantly dipping after their prey. They were for the most part non-breeding Herring Gulls, with a few of Lesser Black-backed Gulls in immature plumage.

On July 18th I observed a number of Black-headed Gulls on the St. Germans River, which had already returned from their breeding-haunts; and by the 27th of the month Common Sandpipers were heard passing overhead at night. During the day I witnessed a large flight of Sand Martins flying north-west; wind north, and weather very fine.

On August 2nd a young Greenshank was brought to the Stonehouse birdstuffer which had been shot in the neighbourhood. Its knees were very thick, similar to those of the Norfolk Plover, and which I have also remarked to be the case with the young of the Green Sandpiper. Its stomach was quite empty. I had

almost forgotten to mention that, when at Wembury, we observed on the rocks a little way from the shore a Cormorant which appeared to have a narrow but clearly-defined pure white ring round its neck, and which contrasted strongly with the general dark plumage. I think we could hardly be mistaken, for we all looked at it through a powerful pocket-glass. Swifts were still to be seen hawking high in the air on August 18th, and the same day a young Corn Crake was brought in which had been killed by flying against the Eddystone Lighthouse. It was in good condition, though its stomach contained nothing but small particles of quartz and gravel. This seems to be rather an early date for the departure for a young bird.

On August 29th I visited Brent, a few miles from Plymouth, and on the River Avon observed several Dippers, both young and old, also many Grey Wagtails, some of which latter had only just begun to lose the black throat-patch of the breeding season. When passing Plympton in the train I saw some Swifts wheeling round at a great height; the weather very fine and warm.

NOTES AND QUERIES.

The Age of an Eagle.—Eagles are proverbially said to be long-lived, although it does not often happen that such statements are based on actual observation. The following paragraph relating to the age of an Imperial Eagle appeared in the 'Times' of Sept. 8th :—"The Berlin 'Post' reports that some days ago at Fürstenwald, in the province of Brandenburg, a field labourer heard a dog howling in a most dismal manner. Running in the direction whence the sounds came he saw a large bird perched on the back of the watch-dog of a neighbouring farmer, and the two were struggling, half in the air, half on the ground. At last they passed into a copse. He ran and called the bailiff of the place where he was working. Returning to the spot they saw the bird hopping a few paces, moving with difficulty. He tried to fly, but was evidently disabled. A shot killed him. They found the dog dead; all the flesh had been literally torn off his bones by his enemy. The bird was an Eagle, of the species known as *Aquila imperialis*, and measured seven feet between the tips of his wings. The dark, almost black, plumage, with the snow-white shoulders, gave a hint as to his age. On his left foot, just above the claws, was a ring made of a strong gold plate, on which were cut the letters, still quite visible, 'H. Ks. o. k.,' underneath which was the word 'Eperjes,' and on the other side the date—

'10. 9. 1827.' Eperjes is a town in Upper Hungary, not very far from the Northern Carpathians. Evidently that Eagle had a history."

Zoology of the Channel Islands.—We have received, from Messrs. Sinel & Co., of David Place, St. Heliers, Jersey, selected lists of zoological specimens collected by them in the Channel Islands. Situated in one of the most favourable spots of the British Islands for collecting marine forms, they appear to be in a position to supply naturalists and students with useful collections, and to enable them to fill up blanks in series where rare or local forms are desiderata. Amongst Crustacea they mention such rarities as *Callianassa subterranea*, and amongst Mollusca, *Macra glauca*. We understand that Mr. Sinel is well acquainted with the birds which frequent the Channel Islands, and can supply well-made skins. His microscopic slides of Marine Zoology may be recommended, for the medium used being of the same density as sea-water and of an excellent preservative nature, the living appearance of the objects is fully retained. A good working naturalist in the Channel Islands has long been wanted, and we hope that Messrs. Sinel & Co. will meet with the support which their energy deserves.

BIRDS.

Grey Crow nesting in Warwickshire.—I send the following as a supplement to Mr. Whitaker's note on this subject:—Early in May I heard that a pair of Grey Crows had been seen in Sutton Park several times. I mentioned the fact to Mr. R. F. Felton, an indefatigable egg-collector, asking him to try and find the nest. On May 21st he was fortunate enough to do so, thanks to the farmer upon whose land it was built, and who informed him that he had shot what he called a "Gaw Crow" with a blue back, and had given it to the ferrets. The nest was placed in the top of a thick high Scotch fir in a small coppice adjoining the park; it was of high dimensions, the foundation being composed of sticks of considerable size and twigs of the fir, the inner portion of fine roots and bark, lined with grass, wool, and hair. Mr. Felton brought me the eggs, three in number, which are of a pale bluish ground colour, streaked with greenish brown, and a little smaller than the normal eggs of *Corvus corone*. I asked him to fetch me the nest, which he intended doing on the 26th, but upon climbing up to it he found that a Kestrel had laid one egg in it. He therefore left it in hope of obtaining the clutch; upon going again on June 2nd found the Kestrel had deserted, so brought me the inner part of nest. I have now the nest and eggs of both Grey Crow and Kestrel in my possession.—ROBERT W. CHASE (Edgbaston, Birmingham).

Wren's Eggs in a Swallow's Nest.—In the last number of 'The Zoologist' (p. 380) is a note by Capt. E. F. Becher respecting the occupation of a Swallow's nest by a Wren. To show that this is not a unique

case I think it worth while to record a similar instance observed by myself. On the 29th May, 1879, I obtained a clutch of five Wren's eggs from a Swallow's nest built under the rafters in the front of a cow-shed at Tunstall, near Sittingbourne, Kent. The nest was evidently not in any way altered by the Wrens, but contained only the few feathers and short hay which I have usually observed in the nest of the Swallow; the original proprietors of the nest were also flying about, and one of them entered it for a moment whilst I was watching. I have little doubt that the Wren had either been robbed of or frightened away from its own habitation when just ready to lay, and therefore adopted the first nest suitable to its requirements.—A. G. BUTLER (British Museum).

Wigeon in Notts in August.—When walking round the lake here on August 5th with Messrs. Aplin and Bidwell, a male Wigeon, in summer plumage, flew out of the rushes. From the way in which it rose and flew away, it could not have stayed here from being wounded. This is the first time I have ever seen a Wigeon in Nottinghamshire during the summer. In my note on the Grey Crow nesting near Birmingham, the word "north" ought to have been "south," but any naturalist would at once see it was a printer's mistake.—J. WHITAKER (Rainworth Lodge, Notts).

Leach's Petrel picked up in Birmingham.—Last week, at one of our local bird-stuffers, I saw a male specimen of Leach's Petrel, which had been picked up dead in Guildford Street, in this town. The common Storm Petrel has several times been obtained in the borough, but this is the first occurrence, to my knowledge, of the rarer species.—ROBERT W. CHASE (Birmingham).

Variety of the Coal Titmouse.—On the 24th of August last my brother, the Rev. W. Becher, shot, in an orchard at Southwell, Notts, a Coal Titmouse (*Parus ater*), a male of the year, of which the following is a description:—Head, nape, and breast white, but crest-feathers strongly tipped with black, giving a mottled appearance to the crest; feathers on the throat very slightly tipped with black; greenish tinge round and behind the eyes and on the sides of the neck; the feathers, for some way down the back, tipped with the normal colour, olive-grey, the remainder being white, the amount of white rapidly diminishing towards the tail; the feathers on the other parts were of the usual colour. The bill was parti-coloured, the culmen and under side of lower mandible being black, the remainder white.—E. F. BECHER.

White and Pied Varieties of Birds.—Apropos of the White Curlew, recorded at p. 377, and your editorial comments, it may be of interest to remark that on Sept. 11th I examined, at the house of Mr. Watson, the verger of Carlisle Cathedral, a pied Woodcock, obtained in June, 1882, in Durham. It is not, however, extensively pied, the leucotism only

extending to some of the flight-feathers of the wings. I may add that a pure white Starling was observed near Cumwhinton, Carlisle, in July, 1883, by my friend, the Rev. J. Howard, and another; that on August 10th I watched for many minutes, near Brough Marsh, a House Martin, of which the primaries and secondaries of the right wing, and the primaries of the left wing, were snow-white; a white and dove-coloured House Swallow was shot at Wigton in August; there is now a beautifully pied House Sparrow in the neighbourhood of Wigton; there are three pied House Sparrows about Carlisle, one of which has been pied since I first observed it in January, 1883; a pied cock Chaffinch haunted the garden of a friend here in the centre of the town throughout the winter of 1882-3; there are one or two pied Jackdaws about Eden Bridge (there were two in spring), and two Rooks in our parish have some white wing-quills. One of our stuffers has a white Song Thrush, shot close to Carlisle in 1880. As I have never seen a pied Shore Lark in any collection, I may add that I had a hen-bird of this species, taken at Dover in 1880, which became pied in the moult of 1881, while in confinement. As pure white varieties of the Goldfinch are very rare, I should like to record that a hen-bird of this species, in the possession of a Mr. Hamilton, of Carlisle, has just acquired (Sept. 13th), in confinement, a snowy garb of remarkable purity. Reared in 1880 by hand, this bird, I understand, acquired in its first moult a sufficient sprinkling of white feathers to make it an object of interest to its owner, who this summer paired it with a male Goldfinch, which, however, ate all his mate's eggs. During the last few weeks this hen, being apparently in perfect health, has assumed a perfectly clear white garb, with the exception of about six crimson feathers on the forehead, a very faint and delicate crescent of pale brown on the throat, and a very rich Goldfinch-yellow "bloom" on the wings; this golden colour is, strange to say, repeated on the breast and outer tail-feathers, both of which portions are deeply tinged with clear gold. The beak and feet incline from pink to flesh-colour. The owner declines to part with this bird on any terms, or I should have tried to perpetuate the variety; but I have put in a claim for its body, if any mishap should occur. From the perfect condition of the bird, it may live many years. Its owner considers that an over-indulgence in lettuce leaves may have assisted in procuring this totally unexpected change of plumage.—H. A. MACPHERSON (Carlisle).

Notes on the Ornithology of Northamptonshire.—The following notes on the Ornithology of our county, from the beginning of the current year, are given to a great extent upon the authority of others, whose names I propose to state. I was absent from home from November 4th, 1882, till August 16th, 1883, and during that period mainly dependent for local bird news upon my friend and near neighbour, Mr. George Hunt, of Wadenhoe House, Oundle, in whose keen powers of observation and strict

accuracy I have complete faith:—Twenty Magpies, *Pica rustica*, were shot in two days, by my informant and his brother, about Barnwell Wold (G. H., *ut supra litt.*, Jan. 4th). I received a Greater Spotted Woodpecker, *Picus major*, female, from G. H., shot by one of my gamekeepers near this place on Jan. 10th. Several hundreds of Herring Gulls, *Larus argentatus*, were seen near Barnwell by G. H. (*litt.*, Jan. 9th). Mr. Hunt has recently informed me that the numbers of this species gradually increased to some thousands, which frequented the flooded meadows in the valley of the Nen, between this place and Thrapston, for several weeks during the daytime, and regularly passed northwards in straggling flocks each afternoon; the great attraction to the Gulls was no doubt the vast quantity of drowned earthworms in the meadows, several of these Gulls, shot at this period hereabouts, having their maws crammed with the animals above named. In 'The Field' of Jan. 13th last there appeared a notice, dated Jan. 16th, 1883, of the occurrence of a Woodchat, *Lanius rufus*, near Stamford, communicated to that paper by Mr. A. G. Elliott, of that town, who, in answer to my inquiries, wrote as follows:—"The Woodchat noted in 'The Field' was picked up dead on the 9th inst; it is a female, and in fair condition; the plumage is slightly soiled. It appears to have been on the fallow-land some time, and had been dead at least two days before I received it; one side of the head was slightly decomposed; it was in very poor condition, and showed all the appearance of a bird that is picked up in a long frost. The exact locality, I believe, would be in Wothorpe parish, but it is in the occupation of a Stamford farmer, and within one hundred yards of Burghley Top, or deer-park, so that in reality the bird was found in Northamptonshire. The *Lanius rufus* I hope to place in my collection of British small birds. I have had several applications to purchase, also several gentlemen to see the bird: it will be there for show." Mr. Elliott also mentioned, in the same communication, the occurrence of a Kentish Plover, *Egialitis cantiana*, near Wansford, on 25th November, 1882. If his determination of this species is correct, this is the first occurrence of the bird in this neighbourhood which has come to my knowledge. I may mention that I am personally acquainted with Mr. Elliott, and have no doubt whatever as to his perfect good faith and considerable acquaintance with British birds. On April 19th I received a letter from Mr. G. Hunt, in which he wrote of having seen six Bernacle Geese, *Bernicla leucopsis*, fly past him at a short distance as he was fishing in the Nen near the village of Aldwinckle. I never heard of the occurrence of this species hereabouts in an apparently wild state before; the probability, at this distance from the sea, is of course in favour of these Geese being semi-domesticated birds, but most persons who keep "fowl" in that condition are careful to have them pinioned, and on the whole I am disposed to give these birds the benefit of the doubt, and to consider them as an

interesting addition to the avifauna of our county. I heard, from one of my gamekeepers, that on July 17th he had taken three young of the Greater Spotted Woodpecker, *Picus major*, from a hole in an oak tree in one of my woods, and attempted to rear them, without success. This species cannot be considered as rare in this neighbourhood, although far less abundant than the Lesser Spotted and Green Woodpeckers, but the nest has been seldom met with to my knowledge hereabouts. On August 13th two young Hobbies, *Falco subbuteo*, were taken from an old nest of a Carrion Crow in a tall oak tree in a wood of great extent some miles distant from this house, and brought thither. On my return home, on August 16th, I found these birds in good health, with much down still amongst their feathers. I am glad to say that the parent birds were spared; the gamekeeper in charge of the wood above mentioned told my man, who went over to fetch these little Falcons, that he believed a pair or two of this species had bred in the same quarter of the wood for many years past, but curiously enough he had no distinguishing name for them. A rotten egg was in the nest with these two young birds. I may also mention that a pair of Hobbies have been haunting one of my woods near this house throughout the months of July and August; we have not been able to discover their nest, and I suspect that their eggs or young must have been destroyed by other than human agency. In Barnwell Wold a pair of Hobbies have certainly reared a brood this season; Mr. G. Hunt saw three in one tree on August 31st close to the Wold, and I and many others have seen two or three, and once four, of these birds on several occasions haunting some rough pasture land in my possession adjoining the Wold. These Hobbies are, comparatively speaking, by no means shy; they glide swiftly at no great height from the ground, crying incessantly. I have not seen these last-mentioned individuals in pursuit of any "quarry," but in a locality nearer home, whilst I was waiting to shoot Wood Pigeons on Sept. 6th, I noticed a commotion amongst a large flock of Rooks at a great distance. I saw a dark speck shoot from the clouds through them nearly to the ground, and a minute or two afterwards a fine old Hobby passed within twenty yards of me with a Yellowhammer in her claws. I am doing my utmost to preserve this beautiful species from destruction in this neighbourhood; but I always like to have a Hobby or two alive, and am particularly anxious to obtain an adult bird early enough in the season to train her for "daring" Sky Larks, as described by old British authors on Falconry. The Hobby seldom lingers with us beyond the end of September, and my personal experience is that the young are rarely fit to train till towards the end of August, so that the time for teaching them their business is very short, whereas an old bird knows it, and would only require to be "reclaimed," a very short operation to any person who understands hawks, with this more docile of the British *Falconidæ*. Mr. W. Tomalin, of Northampton, has recorded (p. 300), and

was good enough to send me private notice of, the occurrence of a Pied Flycatcher, *Muscicapa atricapilla*, male, at Dallington, near Northampton, on May 1st. I have, as I firmly believe, once seen a specimen of this bird here many years ago, but the above is, as far as I know, the only authentic record of a capture of the species within the political boundaries of our county. Mr. Hunt shot a fine specimen of *Larus ridibundus*, with full brown mask and only one leg, near Oundle on May 5th. I only record this fact because the bird does not nest in our county, and its appearance herein in nuptial plumage is very uncommon. Some of this species have bred and reared young in my aviary during these two last summers of 1882 and 1883. Mr. Hunt, writing to me on June 21st, mentioned the unusual abundance in our neighbourhood of Red-backed Shrikes, *Lanius collurio*, and Whinchats, *Pratincola rubetra*. My friend Mr. Frederick Rooper wrote, June 28th, that a "Solan Goose," *Sula bassana*, was brought to him "last month," killed at Ramsey, Hunts, and adds, "I have never heard of one in these parts before: he was very much starved." I include this occurrence, although not within the political boundaries of our county, as I consider that the whole of the County of Huntingdon belongs to the same zoological region as our own. Mr. Hunt reported to me the first appearance of Common Snipe, *Scolopax gallinago*, in our Nen valley this season on August 9th, on which day he shot the only two seen by him near Aldwinckle. I found Green Sandpipers, *Totanus ochropus*, in about their average numbers in this district during the latter half of the month of August. I may mention that I have met with this species in Northamptonshire in every month of the year except June. We have more Sparrowhawks, *Accipiter nisus*, than I ever remember herabouts. My gamekeepers destroyed several nests, with their contents, during June and July. Ten have come to a violent death by their own agency since August 16th on my property, but nevertheless we see one or more on wing almost every day; one of the defunct above mentioned committed suicide by dashing himself against the wire netting of an aviary. One of our gamekeepers reported eleven Curlews, *Numenius arquatus*, passing up our Nen valley in first week of August. An Osprey, *Pandion haliaëtus*, was seen by Mr. Hunt near Wadenhoe on the evening of August 24th, and came within easy shot of me the next morning as I was fishing on our river between this house and Oundle; I snatched up my gun as I saw the bird coming, pursued by a Carrion Crow and many Hirundines, and at first thought that it was a Harrier, *Circus*, but I soon saw my mistake, sat still in the boat, and the Osprey came on till within some fifty yards of me before seeing us; he then soared away high in air over the park, pursued by a cloud of Rooks and small birds, apparently Swallows and House Martins. We had a good view of him the next day (August 26th), near Aldwinckle, and saw him make two ineffectual plunges into a broad reach of the river; this bird was last seen

in this neighbourhood on August 29th, and, as far as I know, our county is as yet innocent of his blood. We notice a very unusual abundance this summer of the Common Turtle Dove, *Turtur communis*, and of the Hawfinch, *Coccothraustes vulgaris*, in this neighbourhood; both these species are comparatively recently established in this part of our county as breeders. Some thirty years ago the Turtle Dove was virtually unknown hereabouts; and, till the spring of 1870, we always looked upon the Hawfinch as an occasional, and by no means abundant, winter visitor; the Red-backed Shrike, *Lanius collurio*, also, though not very common, is now becoming well known in this district, but certainly was not to be met with within the radius of my boyish birds'-nesting rambles from 1840 to 1851, to say nothing of those of my occasional summers at home between the last-mentioned year and 1871. Whimbrel, *Numenius phæopus*, were heard passing over high in air before daylight on August 29th. A young Cuckoo, *Cuculus canorus*, seen September 13th.—LILFORD (Lilford Hall, Oundle, September 15th, 1883).

Late Nesting of the Nightjar.—With reference to the note of Mr. W. Hewett (p. 380), it is somewhat singular that on the same date (August 19th), my friend Mr. Butterfield, of Wilsden, informed me that on August 16th he had found a nest of the Nightjar with one egg in it at Blackhills, Wilsden. On the same evening (August 19th) we visited the nest, and found the egg had evidently been hatched during the same day, and the young bird was lying about a yard away from the egg, quite cold and apparently dead. I placed it in a small tin box and took it home, and about an hour afterwards was surprised to find it very lively. I fed it with small moths, and it thrived very well for three days, but after that time it refused to take food, and died two days afterwards.—H. T. SOPPITT (Saltaire, Yorkshire).

Late Nesting of the Nightjar.—Mr. W. Hewett, in his note on the late nesting of the Nightjar (p. 380), asks if any other correspondent has found young ones so late as the date he mentions (August 19th). I have found eggs very nearly as late. Last year a Nightjar laid two in a wooded dell behind my house; she laid one of them on the 26th of July, and one a day or two earlier. They were hatched on the 13th of August. On the 4th of August, 1880, Mr. F. Norgate and I flushed a Nightjar off two eggs at Cawston, only one of which was incubated, and which probably would not have been hatched for some time, my experience with the other nest showing that eighteen days is the period of incubation. This is longer than in small birds (Passeres). A still later instance of nidification is mentioned in 'The Field' of August 21st, 1880, by a correspondent, who records the finding of two eggs in Sussex, on August 17th, in a small wood. It has been doubted whether the Nightjar rears two broods in a season; that

it generally does so in Norfolk I feel sure, the contrary opinion having perhaps arisen from the circumstance of its being so late a migrant. That the eggs at Cawston were a second laying by birds which had had young previously, I think, as I saw four young ones at the same place able to fly on the 19th of the month previous (July). These would have been at least twenty-one days old, most likely older, and two of them were probably the first brood of the pair whose eggs Mr. Norgate and I found on August 4th. Considerable doubt is expressed on the point in Yarrell (Brit. Birds, 4th ed., p. 383), the editor evidently thinking that if second broods occur they are rare. This year Nightjars have been very scarce with us. I have only seen two young ones, and their familiar "jarring" has been quite a rare sound.—J. H. GURNEY, JUN. (Northrepps, Norwich).

Note of the Long-eared Owl.—One evening in May, 1879, I was standing at dusk in a dense wood of tall firs at Tower Hill, Co. Limerick, where I had often seen birds of this species. One suddenly made its appearance, and perched in a larch close by; and I then heard it several times utter, at intervals of about a quarter of a minute, a very plaintive single note in a high key, which I syllabled "moo." The bird after a short time quitted the tree and perched in another, when it was shot by a boy who accompanied me. I have never had an opportunity of hearing the Tawny Owl, and do not know whether the sound I heard can rightly be described as a hoot; but certainly, if "hooting" consists of the same note two or three times continuously repeated, the cry I heard cannot be classed as such. With regard to the very strange quacking note of the Long-eared Owl (described by Mr. Ussher, Zool. 1882, p. 265), is it not singular that this sound has not (apparently) been heard by English ornithologists, and that, as far as I am aware, no mention is made of it in any of the text-books on British birds? I cannot say how extraordinary this latter note seemed to me. It is impossible that a better description could have been given of it.—WILLIAM W. FLEMYNG (Clonegam Rectory, Portlaw, Co. Waterford).

FISHES.

Occurrence of the Tunny in the Exe.—On the 14th inst. a specimen of the Tunny, *Oreynus thynnus*, was left by the tide in a pool, on the Exe, a mile above Topsham, and above seven miles from the sea. Length from tip of snout to notch of caudal fin, 3 ft. 10½ in.; girth at commencement of first dorsal fin. 26½ in.; width, from root of first dorsal to root of ventral fin, 16 in. The pectoral fin is 9 in. in length, and reaches to the tenth ray of the first dorsal. The first dorsal has 13 rays, the pectorals 31, and the ventrals 15. The pectorals, first dorsal, and ventrals are sunk in deep grooves in the skin. The first ray of the first dorsal is the longest, the eighth the shortest. Length of each lobe of the caudal fin, 9 in.; from tip to tip of caudal, 1 ft. 1¾ in.; length of head, 12½ in.; diameter of eye,

1½ in.; from snout to eye, 4¼ in.; weight about 1 cwt.; nine finlets between second dorsal and caudal fin, and eight between anal and caudal; corslet not marked; colour dark grey on back, silvery white on sides and belly; gill-covers finely ciliated; the lateral line waved near the tail; between the last ray of first dorsal and the second dorsal a space of 1½ in., but the groove is continuous, and probably another ray is developed in older individuals; vertebral column and processes very rigid, and of great strength and hardness; ribs very long elastic rods of bone; small and very sharp teeth in the jaws, but none on the tongue, vomer, or palatines; tongue black, very large, and solid; flesh extremely muscular, dark and meat-like in appearance; abdominal cavity gorged with dark blood; nothing in stomach; heart shaped like the triangular lead-sinkers sometimes used by sea fishermen, the base perfectly flat. This specimen answers exactly to the description of *Oreynus brachypterus*, Cuv. & Val., which Dr. F. Day considers the young of the Common Tunny. Specimens of this fish, of large size, have been taken at Plymouth, Dartmouth, and Dawlish, but this is the first instance of its occurrence in the Exe, and the great distance it had reached from the sea is remarkable. I purchased the specimen for this Museum, but I am sorry to say the effort to preserve it has not been very successful. Whether the fact of the fish having been about forty-eight hours out of water in warm weather had weakened the skin, or whether the skin is naturally of loose structure, I do not know, but it would hardly hold together sufficiently to admit of being stuffed. At first no scales were visible, but the scarf-skin having peeled off exposing them, they became detached and fell off in great numbers; they are largest near the head. I could not find any parasites, with the exception of one *Filaria*-like worm in the abdominal cavity.—W. S. M. D'URBAN (Albert Memorial Museum, Exeter).

Migrations of the Pilchard.—I have it on thoroughly trustworthy authority that large shoals of Pilchards are met with every year in the deep sea eight and more leagues south round to west of the Scilly Islands during the Mackerel season (*i. e.*, between February and June), and before the inshore Pilchard season commences. The Mackerel drift-nets pick up many of these fish, and from their catches there is reason to believe that the Pilchards in these shoals are females with spawn ready to be shed, and of so large a size as to be capable of being meshed in the mackerel nets. Fortunately these fish make a close-time for themselves. My informant tells me that, diverging from the usual rule of fish bearing ripe roe, they are so dry and tasteless as to be worthless as food. I have never that I can recollect seen a Pilchard with roe in it, and when the fish arrive off our coasts in July they are very fat indeed.—THOMAS CORNISH (Penzance).

Large Fishes on the Devonshire Coast.—In June a large Sunfish was seen off Dartmouth and Exmouth. On September 13th a male Thrasher,

15 ft. long, was captured in a drift-net off Exmouth, and was exhibited in Exeter; and I have heard of several large Sharks, probably Blue Sharks, having been taken on the coast this summer and autumn.—W. S. M. D'URBAN.

ARCHÆOLOGY.

Ferret: origin of the Name.—When the Romans introduced the Rabbit into Italy, they introduced the custom of hunting it with Ferrets; and when they imported the same animal into Britain they imported the same custom with it (Pliny, lib. x. cap. 21). The great reason for the Roman introduction of the former animal into both was the pleasure which they took in hunting it with the latter. The Britons adopted what the Romans practised, and have transmitted to us, their successors, the Roman-Spanish hunt and the Roman-Spanish name for the animal employed in it; denominating the latter *Vicerra*, in Welsh *Guivaer*, and in Irish *Firead* or Ferret. See Whitaker's Hist. Manchester (1771), Book I. chap. 10, p. 344.

The Dodo.—In vol. iv. of Shaw's 'General Natural History' there is a coloured figure of the Dodo, a copy of the painting in the British Museum, said to have been taken from life. If so, the artist failed in its proper delineation, as will be readily seen on comparing the head with the skull of a Dodo, found by Shaw, in the Ashmolean Museum, which had been seen by Willughby and Ray, of which I send an outline sketch; also a figure of the Dodo pictured, seemingly a monstrosity, if we may judge from the bill, faulty in shape and size, the lower mandible being convex; whereas in the bill itself it is slightly concave and angular, or Gull-like, towards the extremity, and the bill more depressed than that of the original, which is well-nigh straight for two-thirds of its length. Remarking on the head discovered in the Ashmolean Museum, Shaw says that "it is undeniable that the general appearance of the beak of an Albatross is not greatly dissimilar to that of the Dodo." But they are readily distinguished, the nostrils of the former being high up on the bill towards the forehead, those of the latter situated low down on the mandible towards the extremity; its Pigeon-shaped legs and feet appear too slight to carry so bulky a body, and very unlike the leg described by Grew in his 'Museum Regalis Societatis.'—H. W. HADFIELD (Ventnor, Isle of Wight).

Wild Geese formerly breeding in the English Fens.—With reference to the note under this heading (p. 383), I may state that I know, or more correctly knew, many of the old gunners, and I have heard from them that in Qui, Waterbeach, Swaffham, and Wicken Fens, Wild Geese were very plentiful about the beginning of the present century, and that they left off breeding there about that date or rather before. This many of my informants had heard from older relatives.—E. T. BOOTH (Brighton).

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AN AUTUMN VISIT TO SPITZBERGEN.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

(Continued from p. 409.)

September 16.—Just as I and my boat's crew were ready this morning, a Seal was reported; we immediately gave chase, but it would not let us get near. After we had turned and started shoreward, I shot a couple of Northern Puffins, which were not a pair, as one would have imagined, but both males; and we saw a bird flying, which was probably a "Lom" (Diver). At no great distance from where we landed we saw six deer, a party of five and another of seven being also not far off, and others further off still; in all we counted about forty-eight. After various manœuvres we were reduced to hands and knees, and finally a long stalk on our stomachs through rather wet snow brought us to within 250 yards, and nearer than that it was impossible to crawl. We accordingly shot from there, and each obtained a doe, 58½ in. and 59 in. long, and wounded a third, which we lost. The smaller of the two killed had only one horn, with no signs of a second. Some time later we saw a doe and calf some distance ahead, and five other deer feeding on the hillside a little way higher up. We sent the seaman round, armed with my shot-gun, to try and drive them towards us, while we waited to take up a position until we should see which direction they were likely to take. It considerably surprised me that they allowed the seaman to come up quite close, within gunshot; he refrained from firing, and we presently saw him driving the seven deer in front of him, almost

as if they were a flock of tame sheep! We took up a position in a dry river-bed which they would have to cross; but we placed ourselves badly, and had to scramble out and up higher before we could get a chance of a shot. Arnesen got another doe, 59½ inches, and we each wounded one, which we followed a long way up a steep snow-slope; but were finally obliged to give up, which is always a thing one much regrets having to do. Dragging the deer back this evening was very severe work; we got down to the coast about 10 o'clock, and found that the tide was out, and that we could not get the boat afloat. Directly we stopped after our severe labour we were perished with cold, freezing. We returned on board at 11.50. Our previous day's explorations had shown us that the east side of the valley was evidently the best hunting-ground, and for this M. Rabot had made request: his hunt to-day proved this supposition to be correct. His party had seen a number of deer, of which he bagged four, and a seaman with him eleven. Having only a small boat, they found that four deer were as many as they could conveniently bring back with them, and were obliged to leave the other eleven on the beach to be fetched next day. M. Rabot reported having seen about a couple of hundred Fulmars together, which flew away south. I saw on the Fjord one or two Kittiwakes, three or four Purple Sandpipers, a few Glaucous Gulls, and one or two of the latter up the valley. While we were waiting in the afternoon on the top of a ridge, watching the six deer, two of which were eventually bagged, as recorded above, we saw a Fox come cantering along up to where the deer were feeding, his action being almost exactly that of a musteline animal (*e.g.* a Marten), and he set to work to tear pieces out of a calf which was lying dead close by. He presently saw us, apparently, though a long way off, and scampered away; presently he returned to his banquet, but again took fright, and once more scampered off.

September 17.—I started about midday with the same two men,—it was useless to go earlier, as the tide would have been out,—while Rabot's two men took the fangst-boat to fetch the slain of yesterday. Rabot himself remained on board, as he was knocked up. We landed nearly in the N.E. corner of the bay, and kept along that side of the valley. We had not far to go before seeing deer; a lot of eleven some little distance ahead of us, besides others further on; in all about thirty. I killed a calf

(female, $45\frac{1}{2}$ in.), which in the hurry of a running shot I took to be a good beast, and two does ($63\frac{1}{2}$ in. and $61\frac{1}{2}$ in.). Arnesen shot a calf (female, $48\frac{1}{2}$ in.), a doe ($59\frac{1}{2}$ in.), and a doe with buck calf (53 in. and $51\frac{1}{2}$ in. respectively). It froze hard all day, which made the snow dry and hard, and helped to render the dragging—though it had to be done in double shifts—not nearly such hard work as on the previous day. I saw several Glaucous Gulls, both adults and young, up the valley to-day. Somewhere about 11.35 p.m., on our way down to the coast, I was looking at the Aurora, which was showing to the S.E., but not very bright, when I saw the most curious meteor I have ever seen. It was violet and green, oval, and without a tail, and went from about S.S.E. to N.N.W., or between those points and S. to N., in a horizontal direction, with a slight “trajectory”—*i. e.* it did not come downwards, like a falling star, but had a slight rise and dip, like the course of a rifle-bullet. It appeared to be travelling not much above the level of the Fjelds on each side of the valley. When I first caught sight of it, it appeared to be rather more than half-way across the valley, from south to north, and it travelled slowly across nearly to the north side. On reaching the boat with the first shift of deer, at 11.45, we found three bottles of beer, to which we had been looking forward for some time, frozen solid, the corks being forced out of two of them. Arnesen put one bottle in his pocket inside his jacket, which he buttoned over it, and by the time we were ready to start, after dragging the second shift of deer the last stage to the shore (12.30 midnight), we got about half a bottle of liquid out of it—“beer” it could no longer be called, except by a stretch of imagination: and even a bottle which I thawed completely after my return on board was very little better. We started in a half-gale of wind from about south. Only two men can row in a “Hex” boat, and I thought it better, in such bad weather, to allow the sailors to have charge, though it was intensely cold sitting still, especially after previous exertion. The wind being nearly on our beam, and the small Hex-boat deeply laden with the seven Reindeer, the waves constantly rolled in and broke over us, but the men were ready with a dodge new to me; whenever a wave was about to roll on board, opposite where they were rowing, it received such a smack with the flat of an oar as to break and stop it. However, there were plenty that could not be so stopped, and everyone that broke over us

turned to ice on our persons. I became so cold, having to sit still, that it seemed a question how long I could hold out, feeling as if some part of me *must* go, and I was extremely thankful when, at 1 a.m., we got on board. The Captain wore sea-boots, and on taking them off on his return on board, though he had been rowing hard all the time, he found the leg parts completely lined with ice.

September 18. Temperature, 2 p.m., press. 761, air 30·38, water 35·78.—Still blowing rather fresh this morning, with occasional snow. The men busy all day cutting up and salting the deer—by no means pleasant work to keep on at all day, when it made one's fingers numb in a few minutes. Some of the deer-meat which had been "haunched" was floating alongside to wash, when suddenly there was an alarm of Shark, but he sheered off. He was seen again presently, and came right alongside, intent on venison. Arnesen seized a lance and spitted him, but a lance has no barb, and the harpooner was very slow in getting a harpoon from the fangst-boat, so the shark got away. About an hour later a shark again appeared,—perhaps, from what Scoresby says (Arct. Reg. i. 538, quoted by Yarrell, 'British Fishes,' ii. 525), it may have been the same individual,—and a harpoon being this time available, Arnesen fixed him, and one of the men gave him several thrusts with the lance. After awhile the harpoon drew, but the shark was so sluggish that Arnesen was able to harpoon him again, this time getting a good hold, and after some more lance-thrusts, he was dropped astern to wait until the reindeer-meat was cleared off the deck. The extreme sluggishness of this species of ground-feeding *Plagiostome* was very remarkable. When at length the deck was somewhat clear, he was hauled on board with a tackle from the yard-arm and a bight round his neck. It seemed impossible to kill, and we were therefore perforce obliged to vivisect him. The total length was ten feet nine inches. Brown colour—almost snuff-colour. The liver, which was enormous, we duly put in a cask, and sold on our return to Tromsö, where it fetched kr. 6·23 (about seven shillings). The stomach, from which I had expectations, proved to be quite empty. A good many Fulmars, and three or four Glaucous Gulls astern to-day picking up scraps of venison.

September 19. Temperature, 12 noon, press. 760, air 33·8, s. water 37·22.—Wind light from about S.E. Under way about 5.45. Arnesen had intended to weigh about 3, but it was then so

thick he could see nothing. Anchored off Cape Thordsen about 8.30, and received a visit from Lieut. Stjernspetz and Herr Gyllenskiöld, with four of the men. They had trapped two foxes since our previous visit. Stjernspetz had the day before seen four Rypa, all of which he shot. We had little on board to offer them in return for their hospitality—a little venison, and a few bottles of beer for the men, and English and French newspapers, &c., the latest being the 'Times' of August 15th. Having given into our charge a "supplementary mail," including the official report of the Expedition up to date, our visitors left us, and we were under way again about 10. Several black-looking birds at some distance were probably Puffins, possibly Mandt's Guillemots; we also saw a few Fulmars, and a couple of Brünnich's Guillemots, a bird we have hardly seen this year. Fresh breeze from the east; snow began to fall soon after sailing. From early in the afternoon until 4 p.m. calm; then W. and S.W. wind, with snow squalls. Beating all night.

September 20. Temperature, 12 noon, press. 757, air 32·18, s. water 34·88.—Weather as last night. Anchored in Green Harbour about 8.30 a.m. close to the 'Isbjörn,' whose captain (Steenersen) came on board soon afterwards, and gave us some information about the fish in Spitzbergen. The sea alongside was swarming with *Medusæ*, of which we obtained examples. We went by boat in a north-westerly direction, getting long shots at a Ringed Seal and a young Great Seal. Two hauls of the dredge in 18—20 fathoms water produced more than 100 *Echini* all the same species), many dead shells (two species of mussel), some star-fish, &c., specimens of all which I brought home. Saw several Kittiwakes, one family of Eiders, and another party of three individuals, Fulmars, Glaucous Gulls, &c. The crew busy most of the day filling water-casks and getting stones for ballast. Rabot photographed the smack, Alkhornet, &c., from shore. In the afternoon weighed anchor and left Green Harbour.

September 21. Beating into Bel Sound all day against a S.E. gale; anchored in Recherche Bay, 6 p.m., very cold. As we were entering the bay two of this year's Glaucous Gulls flew very close round the ship, and one of them, after flying for several minutes within three yards of where the harpooner (at the tiller) and I were standing, settled on the gunwale of the boat hanging at the sterndavits, but could not manage to perch there. Later, Rabot

and I went ashore, and walked to the remains of an old house, probably Russian; shot half-a-dozen Purple Sandpipers apiece for the "pot." Rowing back against the wind, we had a very hard job—indeed quite as much as we could do to fetch the ship, where all hands were ready to lower the other boat and come to our rescue; however, we eventually got close under the stern and caught a line Arnesen threw us, and were hauled alongside.

September 22.—Still blowing a gale from S.E. out at sea; here we are comparatively sheltered. Rained all the morning, so that the snow almost disappeared—that is to say, most of the low ground is now green. Off in the afternoon in the fangst-boat, with three hands, over to the glacier opposite, in hopes of a seal. Saw a "Snad" (*i. e.* Ringed Seal), also a very large Great Seal, but neither came near enough to shoot at. Saw three ducks together, which were probably *Harelda glacialis*, but they did not come near enough to shoot at. Whilst trying in vain to approach a family of well-grown Eiders, I shot a Little Auk, the only one seen for several days past. Among the Eiders seen were three immature drakes, the only ones seen during the voyage, I think. I also shot a young Mandt's Guillemot, and could have shot four or five more; saw a dozen or more. One, while we were waiting for the reappearance of the Great Seal, came up within reach of an oar, and remained there without any fear. Hovering over the glacier and gradually soaring over the Fjord, we caught sight of a falcon, which I have not the slightest doubt was a Gyrfalcon, but of which species I cannot pretend to say. I had a good look at him with my glass. Halvorsen called him an "Is-örn"; all three men agreed that it was certainly a falcon. A good many Fulmars, as usual. I believe I saw one old Mandt's Guillemot; all the others were probably young; I do not think any of them were adults, which had already assumed winter dress. Shot a dozen Purple Sandpipers, and found them excellent eating, equal, as it seemed to us, to Snipe, and landed after some Pink-footed Geese, but they were extremely shy, going off while we were still several hundred yards away; there must have been about a hundred and fifty of them. Rabot went ashore in the other boat, and returned in triumph with about twenty-five Purple Sandpipers. More rain in the evening.

September 23.—Continuous rain all the morning. A fox reported on shore, within gunshot of the smack, early in the

morning. A Norwegian "skjöite,"* belonging to Aalesund, Norway, which had been beating up for the Middle Hook on the 21st, and had followed us in here, found herself in very shallow water, and had to get out both her boats and tow out to a fresh berth. She is a white-whaler, but has only twenty-five on board. She relieved our minds as to the fate of the crew of a smack, under the command of a man named Ingebretsen, whom we had heard, from some of the smacksmen we met in Green Harbour, were drowned. He had lost his vessel between Prins Carl's Foreland and the mainland, and going off in his boat was finally picked up by a smack at Middle Hook, Bel Sound, and his boat lies on shore there now. The skipper of the 'Skjöite' paid us a visit; he was up as far as Vogelsang about six weeks previously (that is about a fortnight or three weeks subsequently to the attempt of Capt. Palander and the Swedish Meteorological Expedition to get to the north coast), and found fast pack-ice everywhere to the north. Rain continued, with short intervals, throughout the afternoon; about 3 p.m. the wind began to blow again rough from south.

September 24.—Soon after midnight the rain turned to snow, and the wind fell calm, but at 6 a.m. violent squalls began every few minutes from the west; found the deck, &c., at this hour white with snow. Squalls during forenoon so violent from every point of the compass as to blow the buckets about the deck, and sometimes to spin the ship round. When on deck at 6, saw five young Mandt's Guillemots and a family of Eiders. About noon many Fulmars, perhaps fifty or sixty, or more, wheeling about high in the air, apparently about to start south. I also saw at that time a young Kittiwake, and watched the two fox cubs on the 'Skjöite' playing on the boat reversed on her deck. Arnesen went to the 'Skjöite' to try if he could buy the cubs for me, but the Skipper would not part with them, as he wanted them as a present for his owner. He had also on board, alive, a Pink-footed and Brent gosling. Meanwhile M. Rabot, from the deck, shot a young Mandt's Guillemot and two young Glaucous Gulls; a third (all these three were young of the year) settled on the water, and

* A "skjöite" would be included in English under the generic name "dandy." They are like schooners, except that the mainmast, instead of being taller than the foremast, is about half the size, and the sails to correspond.

began eating the Tystie. Rabot fired at it, but it did not even stop eating; on his firing a second shot it left off eating and washed his beak, as if hit there; presently—it may have been after another shot—it flew, when he again fired and knocked it over. On picking the birds up we found the wounded gull little the worse, so kept it alive. We went ashore on the west side, and, with the assistance of two men, after considerable work, I succeeded in unearthing—or rather *un-icing*—a human skull from an old grave, of which there are several by the old Russian house. This grave had been previously opened at the foot by a bear. The skull is probably that of a Russian Fin. All hands agreed that it had probably been buried more than fifty years,—nearer than that we did not venture to guess,—and we were fortunate in having decided that it was a Russian, for in the evening the cook brought us our supper, looking extremely solemn, and informed us that being a Russian it was all right, but that if it had been the skull of a Norwegian or of a Finn (*i. e.* Laplander) we should never get back to Norway; and further that the people of Balsund (Balsfjord) in Norway were very dangerous, having witchcraft, and that some of them could prevent a vessel getting any “fangst” or shooting any birds, and that the father of Nils (one of our hands, who came from Balsund) had that power, but he did not know whether Nils had it; he believed it all himself, and said something more about “an old Bible” that I could not catch, but I think it was to the effect that this was the means to break the spell. After securing the skull we rowed further north, along that shore, after some Eiders or geese which Rabot had seen while I was digging. We went beyond a great lump of fresh-water ice, twenty feet or so out of the water, which has been in the bay since we arrived. Seeing nothing of the birds, we rowed over to the glacier on the east side, on the chance of seeing the Great Seal again. According to both the English chart and the map published in ‘*Bidrag till K  nedom om de Artiska L  ndernas Naturforh  llanden*,’—I., “*Utkast till Isfjordens och Belsounds Geologi*, af A. E. Nordenski  ld” (1875),—Recherche Bay is entirely surrounded by glacier, except at the N.E. corner; whereas the partial break in the glacier shown at the southernmost point of the bay is an actual division; and we walked along the west shore, picking up specimens of rock, &c., and finding the old house and graves, &c.,

where, according to these authorities, nothing but glacier exists ! There is a glacier at the N.W. point of the bay, where it is marked "Scotts glac." in the Swedish map. After a bit we saw our old acquaintancé of the 22nd, and, going into the bow of the boat, I presently had a long shot at it, and hit it, apparently, in the back. Rabot had the next turn at it when an opportunity offered, but missed. After again coming up once or twice, much too far off, I got a second shot at it and again hit it. Each time we shot it threw its tail well up out of the water, as it dived. After a long wait there was a tremendous splash close to the boat, but it was down before we could turn our rifles to it. Later, there was a similar splash, but not so loud, but again we had not time to fire, and within a few minutes another splash close to the boat ; this time we were ready, and Rabot fired, killing a "Snad." It floated on its back for about ten seconds, and then went down like a stone before we could row the few yards and harpoon it. We waited until nearly dark in hopes of seeing the Great Seal again, and returned on board just as a snow-storm began. A Fulmar found out the oil coming from the Great Seal, and then another found out that from the Ringed Seal. The tenacity of life in the Great Seal struck me as very remarkable, as although I cannot say where either of the two bullets hit him, yet as they were both expanding bullets, fired from an Express rifle, any one who has had experience of them will know what a wound they would make wherever they struck, and the amount of blubber coming from him—sufficient to attract the attention of a wandering Fulmar—shows that one at least of the wounds was severe, and yet it had strength to behave as I have mentioned, and finally swim off, though it may possibly have died soon afterwards. We saw three or four young Mandt's Guillemots, a family of Eiders, and several Purple Sandpipers flying about the Fjord, and a few on the west shore. As we rowed across the bay we saw a flock of about a dozen geese flying in the distance on the west shore—perhaps the birds Rabot had seen previously. Before starting in the boat this afternoon Rabot gave the live Glaucous Gull a Purple Sandpiper, which it immediately swallowed whole. The conversation on board to-night taking a funereal turn—*à propos* of the skull—Arnesen told me that Johannesen, of the 'Lena,' opened the grave of Tobiesen (the well-known walrus-hunter), in Novaija-Zemlya, seven years after he was buried, and found him

little changed; he covered the grave in again, and intended to call again to take his body back to Norway, but when he passed the place, on his homeward passage, it was blowing too hard to allow of his doing so. Arnesen says he himself intends to bring him home, if ever he has a chance, when homeward bound; for there is some suspicion that he may have been murdered, as the two men who wintered with him survived, while Tobiesen and his son both died.

September 25.—Began to weigh at 4.30 a.m., the wind having got round to the north. The sails were hard frozen, and three or four turns in the cables, so only started at 5.15; the deck remained covered with snow, and it was decidedly cold. All the latter part of the afternoon—from 6 p.m. or earlier, until dark—we could see from Dödmansören, lat. $78^{\circ} 13'$ (= Alkhornet), to beyond Hornsundstind, lat. $76^{\circ} 54'$, as we sailed about eight English miles off the coast, and the sunset effect—a lovely pink behind the white Fjelds—was the most beautiful we have seen this year. In the afternoon saw a Brünnich's Guillemot fly past the ship towards the south, the only one seen since the 19th.

September 26.—Fairly abreast of Horn Sound at 1 p.m.; opposite South Cape between 5 and 6 p.m. Fulmars were the only birds I saw. Rabot saw a Brünnich's Guillemot. A few flakes of sleet soon after noon; the ship lurching heavily, so much so as to capsize the galley, luckily not till dinner was just out of the way.

September 27. Lat. at noon, $75^{\circ} 35' N.$, long. $17^{\circ} 1' E.$ —Beautiful sunshiny day; light air from S.W. A good many Fulmars and Kittiwakes about in the forenoon, the latter getting apparently common as we get south. Saw, apparently, a Richardson's Skua which had moulted the long tail-feathers—appeared to be an adult, with white breast. About 1 p.m. saw probably not less than 150 or 200 Kittiwakes feeding on the water, harassed by six or more skuas. Shortly afterwards saw three skuas close to our bow after one Kittiwake; one was, I think, immature, and another appeared to have a very long tail, but as it looked as large as the others it was probably of this species, and not Buffon's. Just afterwards saw two Brünnich's Guillemots flying W. or W.N.W. In the afternoon a party of five, and another of four, Little Auks flying west, or between that and north—anyway, not *south*. Another lot of Kittiwakes on the water, but not nearly so

numerous as the first, and about five skuas together. The night was most beautiful, nearly full moon; a light breeze, taking us along at one knot or so, and the Aurora Borealis very pretty (11 p.m.), though merely what may be called an ordinary display, showing between N.E. and a point S. of W.; most conspicuous in the N.W.

September 28. Lat. at noon, $75^{\circ} 11' N.$, long. E. G. $16^{\circ} 20'$.—Arnesen reported having seen, between 2 and 3 a.m., a lot of Porpoises and a small Blue Whale; a large one seen spouting by one of the men, about 11.30 a.m. A good number of Kittiwakes during the morning, flying round and behind the ship; two or three tried to settle on the vane, which they were effectually prevented from doing by M. Rabot, armed with his gun. A few Fulmars; three or four single Brünnich's Guillemots, and four together; a single bird flying some distance off may have been of this species or a Puffin; a Richardson's Skua close by. About 1 p.m. a Snow Bunting flew past us in about a southerly direction, calling as it passed. Kept on through the night, at an average of a little over one knot per hour, but about 10 a.m. a breeze from W.S.W. sprang up, improving our pace to about four knots. Fine warm weather. About 2.30 p.m. Rabot reported five Brünnich's Guillemots together. Bear Island sighted on port bow about 3 p.m., and we then found that we were nearly thirty English miles to the west of our reckoning. This must be the same current that took us so much to the west on our return to the south the previous year. We threw over a bottle at 6, in the evening, with a request, in Norse and English, that any one picking it up would forward it to the nearest of the addresses given. A westerly breeze now made it slightly colder. A small Blue Whale, between twenty or thirty feet long probably, round the ship about 8 p.m. Several more Brünnich's Guillemots, so that they were rather common hereabouts. I to-day stuffed a Fulmar Petrel that was killed in Green Harbour on the 9th, and which had been hanging meanwhile in the hold, and was still quite fresh.

September 29. Lat. at noon, $74^{\circ} 19' N.$, long. $19^{\circ} 12' E.$.—Dead calm from midnight to noon, when Bear Island was twelve miles or so distant to port. Several Brünnich's Guillemots; I have not seen any young ones since those few on our first arrival in Spitzbergen waters. A few Fulmars and an occasional

Kittiwake. Yesterday and to-day have been considerably warmer, and all hands began gradually leaving off our Arctic bundlings. In the afternoon a Guillemot, which allowed us to come close to it before diving, had assumed the white throat of winter, and another, a little later, was slightly grey. A good many Guillemots during the afternoon; whether all these were Brünnich's or the Common species I cannot say. One immature Glaucous Gull, three or four Kittiwakes, and an occasional Fulmar. Light breeze (less than one knot) from S.W. about noon, which between 4 and 5 became a three-knots-and-a-half E. breeze, making it much colder. The sea has been slightly phosphorescent every night for nearly a week past. Observed a few small *Medusæ* to-day.

September 30.—Strong breeze from E. and E.S.E. all day, slightly moderating towards evening. About 9.30 a.m. from 60 to 100 Kittiwakes following the ship, about three or four young to one adult; also about six Richardson's Skuas, all of which, so far as I could see, were of the black-breasted variety, which (about lat. $73^{\circ} 10'$) is far north to meet with them. During the morning several Guillemots, which I believed to be the common species, but cannot be sure. About 1 p.m. the Kittiwakes appeared to be rather more numerous, and the Skuas—I imagine the same individuals—followed us until well on in the afternoon. Fulmars all day, as usual, one or more constantly in sight, and in the course of the afternoon saw three or four Fulmars and a single Guillemot resting on the water; saw a couple of immature Glaucous Gulls about midday. Wind decreased at noon, and fell almost calm 8 p.m., and showed inclination to go round to the south. The harpooner informed me to-night that we should not get a north wind before Tuesday (three days hence); on enquiring how he knew that, he replied that "it stood in the almanack." He, however, vouchsafed the explanation that Jupiter comes into conjunction with the moon on the 3rd, and that there is generally a north wind with that planet. The Aurora appeared to the west about 10.30, just before which there were a few drops of rain. Soon after 11.30 the clouds cleared off, the moon came out bright, and it became a most beautiful night. The moon had waned to a remarkable extent, as it is only the second night after the full. I lay for a long time in the boat on deck, star-gazing, as the air was quite balmy. The Aurora ceased to be visible after about 12.15, midnight.

October 1. Lat. at noon, $72^{\circ} 7' N.$, long. $18^{\circ} 29' E.$ —A short but hard shower of rain between 5 and 6 a.m.; wind round to S. and S. by E. all day. Only two or three Kittiwakes and a Fulmar or two on going on deck this morning. A little later I saw what I think was a Guillemot flying in the distance. After midday thirty or forty Kittiwakes followed the ship. One or two short rain-showers in the early part of the afternoon, between 1 and 2.30; about 4 p.m. the wind freshened. By the middle of the afternoon Kittiwakes had nearly deserted us,—that is, there were only a few in sight, and they were not constantly following us as before,—and Fulmars were less numerous to-day than hitherto. Two or three Kittiwakes to-day (as before on Sept. 28th) tried to nibble, while on the wing, at the vane, which is a frayed strip of red bunting, apparently supposing it to be meat.

October 2. Lat. at noon, $71^{\circ} 30'$, long. E. G. $21^{\circ} 20'$.—Rain all night, and through the morning until after 4 p.m. About thirty or forty Kittiwakes following us shortly before noon, after which the number fluctuated, and for some time was much less; at 1 p.m. there were probably more than the above numbers, and at this time three Skuas were among them, two being apparently black-breasted and one white; but as I thought for some time that the white-breasted one was of the whole-coloured variety, I feel inclined to doubt whether more, or even all, of those which I thought were whole-coloured might not have proved white-breasted on closer inspection, but *believe* this was not the case. By the middle of the afternoon, as yesterday, the Kittiwakes had nearly left us, as well as the Skuas. Petrels again not so numerous.

October 3. Temperature, 10.30 a.m., air 50.9 , s. water 50.18 ; 5 p.m., air 51.26 , s. water 50 .—Dead calm from 1.30 to 8.30 a.m., then west breeze; fog to southwards preventing us from getting a sight of land. At 9.30 a solitary Fulmar seen; at 11.30 a.m. land sighted on port-bow, then high land on port-quarter, but very indistinct—all in fog and clouds. Excitement ran high, and everybody speculated where we were. It proved, as Arnesen had guessed, to be Sörö, with Sild Punkt and other headlands of Alten just looming through the fog. Wind got round to the south later in the day. In the evening, about 10.30, Aurora visible, but not very bright, in the W. and thence to about W.N.W.

October 4. Temperature, 1 p.m., press. 761.1 , air 53.6 , water

50°18.—Wind S.W.; gale at 3 a.m. At 10 we were well in with the east side of Fuglö, and opposite to the Sea-Lap's house, and with the glass we could make out three cows—the first sign of inhabited land. Directly afterwards off the east side of Spennen, on our port-quarter, we saw a small boat under sail—the second sign of human beings. Saw a few Kittiwakes during the day, and soon after noon saw a Diver (*Colymbus*), or possibly a Shag, flying. Half-an-hour later saw a Greater Black-backed Gull and later (probably) a Herring Gull. A gale from south having gradually sprung up, before which we had to keep shortening sail, we at last took refuge in a little bight called Vandvaag, on the east side of Vandö, opposite some small houses, and we had great reason to be glad we had got there, as it came on to blow harder and harder.

October 5.—Fancying the wind had moderated, we got under way early, but on getting outside we found it was as strong as ever. After knocking about for some time the topsail halyards parted and let the sail down with a run; shortly afterwards the jib-halyards also parted, and down came that sail; and after persevering some time longer we were forced to give it up and run back to our little harbour in Vandvaag, anchoring there about 11.30 a.m., and soon after midday we all got something to eat, for the first time that day. The gale had been increasing during the morning, and we only got in just in time, for by midday it was blowing a hurricane; the water was blown off the surface of the sea and carried off like smoke, rising to an estimated height of fifty feet. To seawards of us (east) the land was soon invisible from the water carried upwards by the wind, off the sea, and on that side it looked exactly as if it was raining hard, or a fog. We to-day, as it is daylight, see what the houses are like, and see cows and a few people, two or three of whom turn out to look at us as we come in, but are soon satisfied and disappear again. As we come in there is a large flock of Eiders, perhaps 100, of which probably more than half are adult drakes; another smaller party, with one splendid adult drake and an immature drake; a few immature gulls—I think Herring Gulls—and Tysties, and one or two Kittiwakes. It continued blowing a hurricane all day, first from S.W., then getting gradually round to full W., and for a short time a little N. of W. then back to W. From about 6.55 to 7.35 p.m., or thereabouts, a most beautiful display of Aurora;

a narrow band, right across the zenith, springing from the east right across to the west. It was most brilliant during the hardest puffs of the squalls, and sometimes narrow bands or lines appeared in it, almost like lightning. Once or twice, right overhead, the ribbon had almost a circular turn in it; occasionally part would assume the colours of a rainbow. The wind towards evening got gradually less violent, rain squalls at intervals; much sympathy felt for crews of "jagts" and other small vessels outside, and hopes expressed for their safety. Later the Aurora was again visible, but not bright, and this time distributed over a large part of the sky.

October 6.—Still blowing the same, but gradually getting better; the squalls, instead of being almost continuous, as yesterday, come to-day, first at intervals of nearly half-an-hour, then perhaps quite half-an-hour apart, and none are so violent as yesterday. It was very tantalising to have to remain here, when we were only twenty-six English miles from Tromsö, and the end of our voyage! One of our anchors dragged during the night. Snow fell in the morning, the highest mountain-top in sight being first whitened, and later in the morning the other mountains being well powdered over, almost to their bases; then it turned to sleet and hail, and these two rang the changes all day, sleet being the commonest. Saw a good many Kittiwakes to-day; one large one, and Rabot reported later seeing about one hundred at once. Arnesen reported two Eagles in the morning, and in the afternoon I saw a large bird soaring over the Fjord, presumably a White-tailed Eagle; also saw one or two Hooded Crows, and a Herring Gull (?) or two, and what was perhaps a Greater Black-backed Gull; a couple of dark birds in the water near the shore were probably Eiders. Arnesen went ashore, while it was comparatively calm, for a gossip; an old man informed him that they had not had such a hurricane since February, and that though it is not uncommon for the water to be blown off the surface out in the bay further to the north, it is very rare for this to happen here. The squalls had almost come to an end by night.

October 7.—Under way at 3 a.m.; sleet and rain nearly all day, but improving latterly. As we were sitting at supper about nine, a sudden squall, whose approach had not been foreseen in the darkness, struck the smack and nearly sent all our crockery to an untimely end. As we ran in to Tromsö the wind was

rapidly freshening, and as nobody hereabouts (except steamers) thinks of carrying lights, we shaved in the darkness close past the jib-boom of the 'Eliazer' sloop, one of the vessels which had lain beset in Stor Fjord all the summer, and then were almost into another "jagt" ahead, but managed to let go the anchors and bring the 'Cecilie' up just in time. We landed at 11 p.m., and thus ended our voyage.*

(To be continued.)

WAYSIDE NOTES DURING A WEST-COUNTRY DRIVE.

BY CECIL SMITH, F.Z.S.

BETWEEN the 20th July and the 7th August last we had a pleasant drive from Lydeard to Salisbury, returning by the Dorsetshire coast. Although our chief object was to attend the Grand Western Archery Meeting at Salisbury, we nevertheless kept our eyes open for birds *en route*, and especially on the drive back by the coast.

The first two days to Yeovil and Blandford were very wet, and we saw nothing worth noticing either then or on the Sunday, which we spent at Blandford. On the Monday we had another wet drive, mostly over the open down, part of Salisbury Plain, to Salisbury. A good deal of the down is now cultivated, though there are few hedgerows to separate the fields; we saw little on our way but a few pairs of Peewits, some of which evidently had young or eggs close by, for they were in a great state of perturbation. The rain, however, prevented much search for the young, which must have hid themselves very cleverly, for there was little for them to hide in except the grass, which was short, and we did not succeed in finding them. On the 24th of July we drove out to Stonehenge, where we were somewhat amused to find that a pair of House Sparrows had taken up their quarters in a crevice between one of the large flat stones on the top and the stones which supported it. They were constantly creeping in at one side and out at the other with food in their mouths, remains of biscuit, pickings of chicken-bones, crumbs of bread, and other things left by pic-nic parties, and not entirely cleared off by the

* Some further remarks on the Zoology of the voyage are reserved for a future number.

shepherds and their dogs. In the winter these Sparrows probably migrate into Amesbury for warmth and food. We were rather surprised not to see a single Wheatear either at Stonehenge or on the other portion of Salisbury Plain over which we passed on the previous day, between Blandford and Salisbury. I was the more surprised at this, as I always thought Wheatears were very plentiful on the Wiltshire downs; and the Rev. A. P. Morris, the vicar of Britford, near Salisbury, in his notes on the birds found in the neighbourhood, says of the Wheatear:—"Common on our downs and other suitable places. Hundreds of these birds used to be caught at one time by the down shepherds in little turf-traps arranged so as to contain a hollow passage, through which the bird was sure to run." Either cultivation, which has increased very rapidly of late years, or continued persecution by the shepherds with their turf-traps, or most probably a combination of these two causes, seems nearly, if not quite, to have exterminated the Wheatears in this district; for not one did we see on any part of Salisbury Plain which we passed over, though we kept a sharp look-out for them.

There is a tolerably good though rather mixed museum at Salisbury; but there is a great want of space for a proper display of the specimens, the birds especially, of which there is a large collection, being very much crowded. Whole rows are placed on shelves in large cases, and stand side by side, touching each other and facing the visitor, so that it is impossible to see more than the bills and breasts. The collection is a tolerably large one, the object having been to include everything in the British list, and to make it as nearly as possible a perfect collection of British, or so-called British, birds. No doubt this is a laudable object, even in a local museum, since it gives an opportunity for comparing and identifying any of the rarer birds which may be procured, and is also of use in other ways; but unless care is taken to distinguish the ordinary local birds, as well as the rarer ones taken in the neighbourhood, by correct labels with names, dates, and localities, the collection is, to say the least of it, disappointing to anyone who may examine it with the object of discovering what birds have been obtained in that particular neighbourhood. A catalogue of the contents of the museum may be obtained for eighteenpence, in which a list of the birds is given, with an indication of the localities from which some of the specimens

came; but in many instances, especially of the rarer birds, the locality is omitted, and probably most of these were set up from foreign skins (some confessedly so); while several which are mentioned in the catalogue as "British" come from places very remote from Salisbury—as for instance, from Stromness and Cornwall. But few birds of interest are marked as local in the catalogue—*e. g.*, two Peregrines, a tiercel, White Parish, 1860, and a falcon, North Tedworth, July, 1860. At one time a pair or two of Peregrines frequented, and I believe bred on the roof and spire of the Cathedral, but I believe there are none there now.* A Hobby, Clarendon, 1856; Great Grey Shrike, Devizes, 1863; Thick-knee, Shrewton, Oct. 1864; Dotterel, Winterborne Stoke; Slavonian Grebe, West Harnham, Jan. 1864; Fork-tailed Petrel, East Grimstead, Nov. 1865; Kittiwake, Cowesfield. There are several cases of Great Bustards in the museum; but only one of these is mentioned in the catalogue, and seems to have come from Malton, Yorkshire. There are several other Great Bustards from the neighbourhood of Salisbury, which appear to have escaped mention in the catalogue. This omission, however, does not so much matter, as a label on the case gives the history of the specimens; amongst them is the Bustard shot by a bird-keeper with a marble at Maddington, near Salisbury, as recorded in 'The Zoologist' for 1871 (pp. 2477, 2510). The collection of birds is a large one, but would have been of greater interest if local specimens were more clearly distinguished either in the catalogue or on the labels.

We left Salisbury for Wareham on July 28th, a pretty drive of about forty miles. Some of the low ground between Wareham and Poole Harbour must be a perfect paradise for the snipe-shooters and wild-fowlers in the winter. We did not, however, see many birds, for a wet afternoon prevented our getting about in the marshy ground. The only objects of interest were a few Herring Gulls, mostly adults, flying over, and five Cormorants. We also saw a pair of Nightjars in some rushy fields by the river; a covey of young Partridges not able to fly; a good many Reed Buntings amongst the rushes in the wet ditches. At Swanage, where we arrived on July 30th, we had a sail across the bay to

* Peregrines frequented the Cathedral at Salisbury so recently as 1880 (Zool. 1882, p. 18). See also Zool. 1877, p. 450, and 1880, p. 300.—Ed.

the entrance to Poole Harbour, and from there to Durlstone Head; but, with the exception of Herring Gulls and Cormorants, there were few birds to be seen. Razorbills and Guillemots apparently do not breed in the chalk-cliffs about Studland Bay, although they do so further down the coast towards St. Alban's Head. We only saw two Guillemots outside the bay towards the lighthouse, and no Razorbills or Puffins. The boatman stated that Puffins bred about St. Alban's Head. We did not see a single Lesser Black-backed Gull in the bay, the only species there being Herring Gulls, and two Black-headed Gulls, *Larus ridibundus*, with the dark colour on their heads nearly gone, which corresponds very nearly with the time of the autumn change of plumage observed in my tame ones. When we got home we found these had very nearly lost the dark colour on their heads; I mention this as I think there is not much difference in regard to the period of change between birds kept in confinement and those in a state of liberty. There is a large collection of stuffed birds at the Victoria Hotel at Swanage, but with a very few exceptions they are not local specimens, nor are the names on the cases always to be depended upon; for instance, the Common Gull, *Larus canus*, was labelled Kittiwake, and the Buzzard and the Peregrine Falcon had changed labels. There were two cases of Choughs which were stated by the manager to have been procured from the cliffs about St. Alban's Head, and between there and Weymouth. We left Swanage for Weymouth on the 1st of August, a rough hilly drive of about thirty-two miles; the views, however, both on the sea and land side were fine and extensive; but the way was not easy to find, for the inhabitants have neglected to put up any direction-posts for the guidance of travellers. During this part of our drive we saw a Common Buzzard, which did not, however, come very near us; and a few Wheatears, but they were not very numerous. On the 2nd and 3rd of August we were out on the bay fishing and sailing; there were a great many Terns about, both the Common and Arctic Terns. On the 2nd we saw a Sandwich Tern, which flew over the boat while we were fishing, and came quite near enough for us to have a good view and make quite sure of its identity. The Gulls about the bay were chiefly Herring Gulls, both adult and immature; we did not see any Lesser Black-backs. There were a few Black-headed Gulls about, which were all more or less

losing the dark colour on their heads. About the breakwater were a good many Terns, and a few Razorbills; these were still in full summer plumage. On the 5th of August we went to Abbotsbury to see the swannery, which appeared to have fallen off very much in regard to the number of swans. There were only thirty young birds this year, and still fewer, I was informed, the year before; very different from 1877, when I was there in May and saw more than 330 nests with most of the hen birds sitting, and the old males standing by their sides; and in 1878, on May 25th, there were nearly as many, and one brood out. Now Weymouth seems quite to cut out Abbotsbury, for there were quite 300 Swans either about the bay or on the backwater, all looking well and in fine condition; while those at Abbotsbury did not look particularly healthy, and appeared low in condition; and the boy who showed us round said they had to be fed three times a day with Indian corn; the few young ones were being fed with short cut grass from the paths which had been mown and the grass thrown to them, for which they appeared very eager. I do not know the reason for this decrease in the number of swans bred every year, but should be inclined to attribute it to the fouling of the ground; for the space actually occupied as a breeding-ground is small, and has been used for the purpose without change, I imagine, for years. It certainly smelt strongly, and no ordinary poultry or tame ducks would stand being reared year after year on such foul ground. A few no doubt stray away up and down the coast and over to the Channel Islands, and get shot; but so few that it can make no appreciable difference in the numbers; nor is it certain that every Mute Swan shot either along the coast or in the Channel Islands is a straggler from Abbotsbury; for there are as many or more swans at Weymouth and a good many on the Exe, some of which may wander along the coast or across to the Channel Islands.

It does not seem to be known at what precise date the Abbotsbury swannery was first established, and I should be glad if any reader of 'The Zoologist' can furnish information on this point. Hutchins, in his 'History of Dorset,' says a good deal about the swannery, but he does not trace it back much further than the time of Henry VIII. It seems from his account, that "in the thirty-fifth year of Elizabeth, the water, soil, and the fishery called the East Flete, and the flight of Wild Swans called the

Game of Swans, yearly breeding, nesting, and coming there, were held by John Strangways at his death of the Queen in chief. This property seems to have been granted to the Strangways in the time of Henry VIII.; for in an action by the Crown against Joan, widow of Sir John Young, it was pleaded by the defendant, who set up a prescriptive right to keep white swans unmarked, that the Abbots were seized of the estuary-banks and soil in fee, and that there was time out of mind a game or flight of wild Swans and Cygnets (*volatus cygnorum et cygnettorum*) haunting there which were not accustomed to be marked, and that in the thirty-fifth year of Henry VIII. the King granted it to Giles Strangways, who demised it for one year to the defendants." This shows that in the thirty-fifth year of Henry VIII. a swannery had existed at Abbotsbury for a long time previously—that it had formerly been the property of the Abbots; but it does not appear for how long a time, or when, or by whom it was founded; neither can I find any indication of the original date in Hutchins' 'History,' above referred to, or in various papers which have appeared in 'The Zoologist' on the subject by Mr. Harting, who quotes the case above alluded to at greater length and more fully than I have done (Zool. 1865, p. 9671), or by the Rev. A. C. Smith (Zool. 1877, p. 505), or by Mr. Gurney (Zool. 1878, p. 208).

Perhaps this question savoured too much of Archæology for consideration at that time, but now that the pages of 'The Zoologist' are open to the discussion of such subjects, someone perhaps may take interest enough in the combination of Archæology and Zoology to work it out. It would be interesting as tending to indicate approximately the date at which the Mute Swan was first introduced into England. Yarrell states that this bird was first introduced from Cyprus in the time of Richard I.; but may not the swans at Abbotsbury have been introduced on the Fleet long before that time? There seems no particular reason why the Mute Swan should not, like the Pheasant, have been introduced by the Romans; at all events it would be interesting to discover the origin of the Abbotsbury swannery, and, if possible, to test the truth or otherwise of Yarrell's statement. From the mention by Hutchins of Hoopers and a smaller species of swan occasionally visiting the Fleet, I suppose both Hoopers and Bewick's Swan may sometimes be found on that piece of water in the winter.

The Terns on the Chesil Beach are always more interesting to me than the Swans. There were a good many Terns (so far as we could distinguish at the distance, chiefly Common Terns) flying about and hovering over the Fleet, but afterwards, when we got on the Chesil Beach, we saw many more. The seine was just being hauled, and the Terns and a few Gulls had collected to pick up any fish that escaped from the net, sometimes getting one or two that came too near the surface inside the floats of the net. They were very tame, and seemed not to mind the operation of hauling the seine; they kept a sharp look-out for any small fish thrown back into the sea for them, and dropped upon it immediately. As we saw some of them busily engaged in carrying any small fish they got up the Chesil Beach, Weymouth way, we supposed, though it was late in the year (Aug. 4th), that they still had young about not able to fly or feed themselves, which supposition afterwards proved to be correct. We saw both Common and Arctic Terns, the former the most numerous, and one or two Lesser Terns busily carrying food to the Chesil Beach. They were very sharp in seeing anything in the way of food, and I thought quicker on the wing than the Common Terns, and in making their dash down on a small fish. They certainly appropriated a very fair share of fish, and seemed bolder in coming nearer to us than the other Terns; so that, besides the difference of size, we could perfectly identify them by the marking of the head and face, and the colour of the bill and legs. We could not make out any Sandwich Terns, though we kept a sharp look-out for them. I was sorry for this, for when I was there in May, 1877, I had distinctly seen a Sandwich Tern on the Chesil Beach, and had a good opportunity of identifying it; and I had hoped to be able to prove this time that the Sandwich Tern bred there. In this, however, I was disappointed.

The next day, Aug. 5th, we went for a walk on the Chesil Beach to see whether we could find any young birds there, and in this we were successful; for we found the young in every stage from the chick just out of the egg to some further advanced, but still in the down, and others just growing their feathers, the most forward being nearly able to fly. Those most advanced hid themselves amongst the pebbles and stalks of a wild pea, *Lathyrus maritimus*,*

* I am indebted to Dr. Prior for identifying this plant for me from some specimens brought home.

which I believe is rather local, but which grows on parts of the Chesil Beach. The young birds hid amongst these peas, with their grey backs just showing above the leaves; they looked like largish grey pebbles, of which there were a good many about. They kept perfectly still, so still indeed that we were sometimes in danger of treading on them. Many of them I dare say are trod upon in this way by the cattle which are allowed to stray on the beach (I suppose to eat the wild peas, of which they seem fond), for we found many remains of dead Terns (chiefly adult Common Terns); but whether they had been trodden on by the cattle, as we surmised, or were shot by someone in defiance of the Wild Birds Protection Act, or had fallen victims to two Hen Harriers, which we saw the next day, we could not be certain. It is not unlikely that in many cases the Harriers were to blame, for everything was gone except the legs, wings, head, and sometimes the breast-bone.

As to eggs, we found a good many, the first discovered being that of an Arctic Tern, which I tried to blow; but it burst as soon as I made a hole in it, and the smell was anything but pleasant.* A clutch of three Common Terns' eggs were not so far gone, and we managed to blow them successfully, though the operation was by no means a pleasant one. These were in a nest on the Fleet side of the Chesil Beach, just above high-water mark. The stones had been scraped into a hollow, and there was a lining of dry rushes and grass cut up small, with longer bents outside; these had evidently been picked out of the refuse left by the tide about high-water mark. Some of the nests were mere hollows formed in the ridge of weed and stuff left by the tide; others were merely depressions amongst the small pebbles, without any lining. Most of the nests were on the Fleet side of the Chesil beach, and low down; but some were higher up, and others on the sea side of the beach. The Arctic Tern's egg we brought home was found on the sea side, without much in the way of a nest. Altogether we brought home four Common Terns' eggs, one Arctic Tern's egg, and one doubtful one; it is small for a Common Tern's egg, but in shape and marking it is like some eggs of this species which I took on the rocks to the north of Herm, in the Channel

* To prevent an egg in this condition from bursting, it should be held under water while being blown.—ED.

Islands, some years ago, though considerably smaller. The egg that burst was certainly an Arctic Tern's egg, as was the one hatching. We saw either the same or another pair of Lesser Terns again, and they evidently had eggs or young near at hand; for they were very anxious, at times flying close over us and screaming, but we did not succeed in finding either eggs or young.

We saw a few Ring Dotterels, but did not find eggs or young; two young Black-headed Gulls just as we came on the beach; and a good many Herring Gulls and Cormorants.

On the opposite side of the Fleet to the Chesil Beach, on some rising ground, is a moderate sized rabbit-warren, which seemed to contain only white rabbits—at least, we could see no others; but of course the white ones were most conspicuous, and there might have been some of the ordinary colour which escaped our notice. I do not remember having seen any reference to this warren before, and do not know how the breed was originally established, or whether any care has been taken to perpetuate it.

On August 6th we left Abbotsbury for Lyme, a very hilly drive all the way, and not very easy to find at first. On the open down over the cliffs between Abbotsbury and Bridport we saw a Hen Harrier, searching probably for young Peewits, as it was quartering the ground very steadily, and sometimes in the course of its hunt coming quite close enough to us to be identified even without the help of a field-glass. A little lower down towards the sea we saw another Harrier engaged in the same way, probably also hunting for young Peewits, which no doubt were somewhere about, though on this occasion we did not see any; but in 1877 earlier in the year I had seen near the same place a good many old Peewits about, which evidently had nests. I fancy Hen Harriers are rather fond of young Peewits, for when riding over Dartmoor some years ago I saw an adult male Hen Harrier hunting over some marshy ground much in the same way, and close by I found a brood of young Peewits, not quite able to fly, crouching in the heather. So close did they lie, that I dismounted and caught one. These or some other Hen Harriers might, as I have suggested, be responsible for the remains of the Terns on the Chesil Beach, for the breeding-place was at no great distance from the spot where we saw them. We saw nothing worth noting in the natural-history way at Lyme, nor on our drive home from Lyme the next day.

THE MIGRATION OF BIRDS AS OBSERVED AT LIGHTHOUSES IN 1882.*

THE General Report of the Committee, of which this is an abstract, comprises the observations taken at lighthouses and light-vessels, and a few special land stations on the east and west coasts of England and Scotland, the coasts of Ireland, Isle of Man, Channel Islands, Orkney and Shetland Isles, the Hebrides, Faroes, Iceland, and Heligoland; and one Baltic station,—Stevns Fyr on Stevn Klint, Zealand,—for which the committee is indebted to Professor Lütken, of Copenhagen. Altogether 196 stations have been supplied with schedules and printed instructions for registering observations, and returns have been received from about 123—a result which is very satisfactory, showing as it does the general interest taken in the work, and the ready co-operation given by the light-keepers in assisting the committee.

The stations returning the best-filled schedules are—on the east coast of Scotland: the Pentland Skerries, nine, Sumburgh Head, four, Bell Rock, three, and Isle of May no less than nineteen; on the east coast of England: Farne Islands, eleven, and after this Flamborough Head, Spurn Point, and several of the light-vessels off our south-east coast. On the Irish coast the best returns have come in from the Tuskar Rock, on the Wexford coast. This is the extreme south-eastern point of Ireland, and the nearest land to the Welsh coast, and seems well situated for observations.

Taken as a whole, and comparing them with reports from the English coasts and elsewhere, it is evident that Ireland lies comparatively out of the track of migrants; and its western stations are especially poor. These have, however, much interest in themselves, in the notices of the movements and habits of the various sea-fowl frequenting that wild district.

* Report of the Committee, consisting of Mr. John Cordeaux (Secretary), Mr. J. A. Harvie Brown, Mr. P. M. C. Kermode, Professor Newton, Mr. R. M. Barrington, and Mr. A. G. More, reappointed by the British Association at Southampton, for the purpose of obtaining (with the consent of the Master and Brethren of the Trinity House, and the Commissioners of Northern and Irish Lights) observations on the Migration of Birds at Lighthouses and Lightships, and of reporting on the same.

The entries in the schedules returned to us have, as might be expected, special reference to the movements of various species of land-birds; yet many observations will be found in the general report. on the going and coming of sea-fowl, which dwell for a season on the cliffs, islands, and outlying rocks off our coasts, their mode of feeding, nesting, &c. These are valuable as made by those who actually live amongst the birds, and have ample opportunity and leisure to observe their habits and report thereon. Thus the presence of the Gannet all around the coast of Ireland during the breeding season points to the conclusion that a considerable proportion of the birds seen do not breed. The Little Skellig Rock, off the Kerry coast, is the only Irish breeding-place of this species, and when visited by Mr. Barrington in 1880 there were scarcely thirty pairs nesting there.

As in preceding years, the lines of autumn migration has been a broad stream from east to west, or from points south of east to north of west, and covering the whole of the east coast. In 1880, to judge from the returned schedules, a large proportion of the immigrants came in at the more southern stations; in 1881 they covered the whole of the east coast in tolerably equal proportions; but in 1882 the stations north of the Humber showed a marked preponderance of arrivals. Altogether a vast migration took place this year upon our east coast, the heaviest waves breaking upon the mouth of the Humber, Flamborough Head, the Farne Islands, Isle of May at the entrance to the Firth of Forth, and again, after missing a long extent of the Scotch coast, at the Pentland Skerries.* The Bell Rock also came in for a share, although apparently a much smaller one than the Isle of May. The easterly winds prevailed all along our east coasts, generally strong to gales, and the succession of south-easterly and easterly gales in October, between the 8th and 23rd, occurring as they did at the usual time of the principal migration, brought vast numbers of land birds to our shores. From the Faroes in the north to the extreme south of England this is found to have been the case.

* The absence of returns, year by year, on the Scotch coast between the Bell Rock and Dunnet Head, embracing ten important lighthouses, is remarkable, not a single statistic of direct value as regards general migration having, so far, rewarded our inquiries. No communications, positive or negative, have been received from these stations, except a brief return from Girdleness.

Although migration—that is, direct migration—on our east coast is shown to have extended over a long period, commencing in July and continuing with but slight intermissions throughout the autumn and into the next year to the end of January, yet the main body of migrants appeared to have reached the east coast in October, and of these a large proportion during the first fortnight in the month. From the 6th to the 8th inclusive, and again from the 12th to the 15th, there was night and day an enormous rush, under circumstances of wind and weather which observations have shown are most unfavourable to a good passage. During these periods birds arrived in an exhausted condition, and we have reasons for concluding, from the many reported as alighting on fishing-smacks and vessels in the North Sea, that the loss of life must have been very considerable. Large flights also are recorded as having appeared round the lanterns of lighthouses and light-vessels during the night migration. From the 6th to the 9th inclusive strong east winds blew over the North Sea, with fog and drizzling rain, and from the night of the 12th to 17th very similar weather prevailed. Mr. W. Littlewood, of the Galloper lightship, forty miles south-east of Orfordness, reports that on the night of October the 6th Larks, Starlings, Tree Sparrows, Titmice, Common Wrens, Redbreasts, Chaffinches, and Plovers were picked up on the deck, and that it is calculated that from five to six hundred struck the rigging and fell overboard; a large proportion of these were Larks. Thousands of birds were flying round the lantern from 11.30 p.m. to 4.45 a.m., their white breasts, as they dashed to and fro in the circle of light, having the appearance of a heavy snowstorm. This was repeated on the 8th and 12th, and on the night of the 13th 160 were picked up on deck, including Larks, Starlings, Thrushes, and two Redbreasts. It was thought that 1000 struck and went overboard into the sea. It is only on dark rainy nights, with snow or fog, that such casualties occur; when the nights are light, or any stars visible, the birds give the lanterns a wide berth.

Undoubtedly the principal feature of the autumn migration has been the extraordinary abundance of the Gold-crested Wren. The flights appear to have covered not only the east coast of England, but to have extended southward to the Channel Islands and northward to the Faroes (see Report, East Coast of Scotland). On the east coast of England they are recorded at no less than

twenty-one stations from the Farne Islands to the Hanois Lighthouse, Guernsey, and on the east coast of Scotland at the chief stations from the Isle of May to Sumburgh Head (at which latter station they have rarely been seen in previous years). Mr. Garrioch, writing from Lerwick, says:—"In the evening of the 9th of October my attention was called to a large flock of birds crossing the harbour from the island of Bressay, and on coming to a spot on the shore where a number had taken refuge from the storm I found the flock to consist of Goldcrests and a few Firecrests* amongst them; the Goldcrests spread over the entire island, and were observed in considerable numbers till the middle of November." The earliest notice on the east coast is August 6th, the latest November 5th, or ninety-two days; they arrived somewhat sparingly in August and September, and in enormous numbers in October, more especially on the nights of October 7th and 12th, at the latter date with the Woodcock. This flight appears to have extended across England to the Irish coast, for on the night of the 12th a dozen struck the lantern of the Tuskar Rock Lighthouse, and on the night of the 13th they were continually striking all night. During the autumn enormous numbers crossed Heligoland, more especially in October. On the night from the 28th to the 29th Mr. Gätke remarks:—"We have had a perfect storm of Goldcrests, perching on the ledges of the window-panes of the lighthouse, preening their feathers in the glare of the lamps. On the 29th all the island swarmed with them, filling the gardens and over all the cliff—hundreds of thousands. By 9 a.m. most of them had passed on again." Not less remarkable was the great three days' flight of the Common Jay, past and across Heligoland, on the 6th, 7th, and 8th of October. Thousands on thousands, without interruption, passed on overhead, north and south of the island too, multitudes like a continual stream, all going east to west in a strong south-easterly gale. It would have been interesting if we had been able to correlate this migration of Jays with any visible arrival on our English coast, but in none of the returns is any mention made of Jays. Subsequently we have received numerous notices of extraordinary numbers seen during the winter in our English woodlands. This seems especially to

* The distinction between the two species had been clearly pointed out to Mr. Garrioch.

have been the case south of a line drawn from Flamborough Head to Portland Bill in Dorset. Additions and unusual numbers were also observed at Arden, on Loch Lomond side.

Immense numbers of the Hedgesparrow passed over Heligoland in October, more especially on the 6th, 7th, and 8th. It is curious that on the 8th of the same month they swarmed in astonishing numbers both at Spurn Point and in North-east Lincolnshire.

Woodcocks arrived on the east coast on the night of October 12th, or early morning of the 13th. Wind east, strong, fog and drizzling rain. On the morning of the 13th they are recorded from ten stations, covering 350 miles of coast, from the Isle of May to Orfordness.

Some species which occur with tolerable regularity on the east coast have during the autumn of 1882 been remarkably scarce. Very few Short-eared Owls have been seen in England or Scotland. The Common Linnet and Twite have also been very scarce, and the same remarks apply to Heligoland.*

The returns show very clearly that the spring lines of migration followed by birds are the same as those in the autumn, but of course in the reverse direction—from W. and N.W. to E. and S.E. Another point worth noting is the occurrence of many species in spring at the same stations frequented by the species in autumn. Thus double records occur at the Mull of Galloway, Bell Rock, Isle of May, as well as at some English stations.

As this is the fourth report issued by the committee, we may perhaps, with the mass of facts at our disposal, be expected to draw deductions which, if they do not explain, may serve at least to throw some light on the causes influencing the migration of birds. We might reasonably reply that the work undertaken by us was not to theorise or attempt explanations, but simply to collect facts and tabulate them; this we have endeavoured to do in the shortest and simplest manner consistent with accuracy of detail. There is, however, one circumstance which can scarcely fail to present itself to those who have gone carefully into the reports issued by the committee, namely, the marvellous persistency with which, year by year, birds follow the same lines, or great highways, of migration, when approaching or leaving our

* There was a vast rush of the Common Linnet at the Isle of May from the 9th to the 23rd of October.

shores. The constancy of these periodical phenomena is suggestive of some settled law or principle governing the movement. It is clearly evident, from the facts already at our disposal, that there are two distinct migrations going forward at the same time, one the ordinary flow in the spring and ebb in the autumn across the whole of Europe. A great migratory wave move to and from the nesting-quarters of the birds, in the coldest part of their range, north-east in the spring and south-west in the autumn. Quite independent of this there is a continual stream of immigrants, week by week and month by month, to the eastern shores of these islands, coming directly across Europe from east to west, or more commonly four points south of east to north of west, and the reverse in the spring. These immigrants are mainly composed of those common and well-known species which annually make these islands their winter quarters, and, as a rule, take the place of our summer birds. They come in one broad stream, but denser on some special lines or highways than others. Cutting the line of ordinary migration at nearly right angles, one flank brushes the Orkney and Shetland Isles, pouring through the Pentland Firth, even touching the distant Faroes; the southern wing crosses the Channel Islands, shaping its course in a north-westerly direction to the English coast.

ON SOME SO-CALLED FISH-EATING BIRDS AT THE INTERNATIONAL FISHERIES EXHIBITION.

BY E. CAMBRIDGE PHILLIPS, F.L.S.*

THE extraordinary and almost unlooked-for success which has attended the Fisheries Exhibition, and the enormous numbers of the people of all classes that have up to the present time visited it, must open our eyes to the fact that Science is at length steadily and surely working its way among the masses, who have been only too anxious to enjoy that practically scientific treat which the International Fisheries Exhibition has been and is still affording them.

Among the various collections exhibited, those of the British piscivorous and non-piscivorous birds particularly attracted my

* A paper read before the Woolhope Naturalists' Field Club at Hereford, October 4th, 1883.

attention, and suggested the remarks which follow, and which are here offered in the hope that they will help to remove some of the misapprehension which prevails concerning the food of our aquatic birds. This seems the more desirable since most of the birds which are exhibited have been seen by thousands for the first time; I allude particularly to those of the working classes who have thronged the Exhibition.

Let me therefore first notice as briefly as possible those fish-eating birds about whose scaly diet there is no possible doubt; and secondly, more fully, those birds which, though exhibited as "fish-eating birds," are not in my humble opinion of piscivorous habits, and which for this reason ought not to have been exhibited with the others. Among the fish-eating birds, properly so called, are some exceedingly good specimens of the Fish Hawk or Osprey; Herons in numbers, two of which I noticed stuffed as if killed by an eel tightly twisted in a knot round the neck—an apt illustration of the biter bit. Kingfishers in abundance seemed to have more attractions for most people than any other bird in the collection. A Night Heron is labelled in the catalogue as "very rare," although a White Stork, Egret, and Spoonbill seem not to have been deemed worthy of such distinction.

An excellent collection of Gulls, Grebes, and Divers (in many instances beautifully preserved and set up, especially the young of the Common Coot) is especially worthy of notice. Why the Darter (*Plotus anhinga*) should have been exhibited in a British collection I am at a loss to imagine, it being a native of America which has never yet found its way to this country. Perhaps one of the most striking cases in the Exhibition is a pair of Lesser Terns, *Sterna minuta*, beautifully stuffed by Mr. T. E. Gunn, of Norwich, one bird hovering over its eggs in the sand, arranged correctly in their so-called nest with the four pointed ends together; the other bird dead by its nest with the blood on its breast, having evidently been shot, affording an admirable illustration of the necessity of protecting by legislation our sea-birds during the breeding-season, the Cormorant and Great Black-backed Gull perhaps alone excepted. Passing by numerous waders which are classed as "fish-eating birds," such as the Greenshank, Redshank, Godwit, Stints, and Plovers of various kinds, but which properly speaking can hardly be so designated, though I may give them the benefit of the doubt since on the sea-shore their food probably consists

of mollusks, worms, and smaller Crustacea left on the edge of the retreating waves, I now come to those birds which, I think, have no claim whatever to be regarded as fish-eaters.

First is our old friend the Water Ouzel or Dipper, *Cinclus aquaticus*, the cheeriest of all our water-birds, but which, not being well stuffed, looks very unlike the burly little bird, with the white breast always turned towards us, that we meet with on all our Welsh streams. The late Frank Buckland could not bring home the charge of fish eating to this bird, although he tried hard to do so. I myself, after much observation, have never yet seen it with any spawn in its mouth, and have come to the conclusion that its food consists chiefly of aquatic insects and small mollusca, in which view I am supported by many ornithologists. We have then the Moorhen, *Gallinula chloropus*, that seems so domesticated a bird that we are all familiar with it; although it is usually found on lakes, ponds, still-flowing rivers, and canals permanently, yet I have often seen it frequent ponds in which there were not, nor ever had been, any fish. There can, I think, be no doubt that it feeds on the seeds of various aquatic plants, and on snails, worms, and beetles, together with corn or other grain when it gets the chance. Hearing the remark, "Here is a rum little fellow," I looked up and saw a good specimen of the Spotted Crake, a hen bird, with the customary red eyes inserted by the birdstuffers. Where taxidermists got this idea I do not know; the eye of a living Spotted Crake which I had in my hand was a beautiful olive-green, and exactly matched the colour of its legs and feet. In Wales this beautiful little bird is usually found in bogs, especially where intersected by a small warm stream. I have moved six in one day in a spot like this where no fish could possibly be, but have never seen one on an open brook. The food of this bird consists probably of the more minute aquatic insects, something like the Moorhen, which it much resembles in shape. I do not think, however, that it ever touches grain, the places which it frequents being far enough away from all kinds of corn.

The Water Rail in its habits resembles the two preceding species, except that it is found in such strangely different localities. I have flushed it on the banks of a large lake, often in a brook, sometimes in a dry grass-field, as well as in an open lane, but have never seen it or the Moorhen on the hill-bogs. I imagine

that its food is much like that of the Moorhen, though, from its constantly shifting its quarters, it may be possibly more varied. It, however, never feeds on the water swimming like that bird, but may be sometimes seen feeding along the edge. Both this and the Spotted Crake are such extremely shy birds that it is difficult to observe their movements except at brief intervals.

The last bird I have on my list is the Grey Wagtail. I need hardly say that it feeds chiefly on flies, and perhaps occasionally aquatic insects; but if it ever should catch a tiny fish, which I doubt, why are not all the other Wagtails included in the collection, their food and habits being so very similar? Had the Dipper, the Moorhen, the Spotted Crake, the Water Rail, and the Yellow Wagtail been separately exhibited as aquatic birds, no exception could have been taken; but to include them amongst such as feed exclusively on fish is, to say the least of it, misleading.

NOTES AND QUERIES.

MAMMALIA.

The Beaver in Norway.—From an interesting paper on the Beaver in Norway, published by Herr Collett, of Christiania,—‘*Nyt Magazin for Naturvidenskaberne*,’ 18 Bind, 1ste Hefte (1883),—it appears that this animal, formerly to be met with in many parts of that country, is now only to be found in two rivers in the south. A colony was observed near Porsgrund in 1876, but disappeared in 1880. The total number of Beavers in Norway at the present is estimated by Herr Collett at one hundred or thereabouts, and it is satisfactory to learn that he does not think they are decreasing. It may be remembered that Mr. A. H. Cocks furnished some interesting particulars on this subject in ‘*The Zoologist*’ for 1880 (pp. 232, 497).

Note on the Water Vole.—In the parish of Northrepps there is a small pond, overhung by an ash tree; on Sept. 28th a Water Vole was observed gathering up the fallen seed-vessels of the ash, and carrying them into his hole on the side of the pond. The animal was very tame, and my informant observed him several times, in quick succession, repeating this operation, which may perhaps be worth recording. I find that hillocks, resembling mole-hills, but a trifle larger, are sometimes thrown up in pastures by the Water Vole.—J. H. GURNEY (Northrepps Hall, Norwich).

Capture of a Dolphin off Plymouth.—On the 13th September a Dolphin, *Delphinus delphis*, rather curiously marked, was purchased by Mr. W. Hearder, of Union Street, Plymouth. Besides the wavy lines generally seen on the sides of this species, its body was crossed by five rather faint, but perfectly distinct, narrow bands. These peculiar marks—of which I have made a coloured sketch—I had never before observed on any other example of this cetacean; but, strange to say, I have since read of a White-beaked Dolphin, *Delphinus albirostris*, similarly marked, having been lately captured near Berwick.—J. GATCOMBE (Stonehouse, Plymouth).

BIRDS.

Notes on the Ornithology of North Northamptonshire.—Since my last date in this Journal, viz. Sept. 15th (p. 425), my notes will, I fear, present little but purely local interest; but here they are for what they may be worth. On Sept. 15th a Dabchick, or, as it is called by our country people, “Didopper,” *Podiceps fluviatilis*, took wing no less than three times before my boat as I was fishing on the Nen, at a short distance above this house. Although this species is common enough on our river, and to be seen during sharp frosts in every open pool, or “wake,” in the ice, I seldom meet with it during the summer months without hunting for it, and never before the above occurrence saw one rise and fly from thick covert, unpressed by a dog; the individual in question appeared to be a young bird of the year. On Sept. 21st, the first Jack Snipe, *Scolopax gallinula*, of this season was shot by my son from a rushy pit near Thorpe Waterville. The earliest date of appearance of this species in this neighbourhood I find in my Game-book for 1852, in which year I killed a Jack Snipe on Sept. 7th. Mr. G. Hunt found and shot nine of these Snipes on the 11th of the current month (October, 1883). On Sept. 21st, Grey Wagtail, *Motacilla melanope*, seen for the first time this autumn, by the river-side close to this house. On Sept. 26th, Redwings, *Turdus iliacus*, seen for the first time this season; also Ring Ouzel, *Turdus torquatus*, and Wigeon, *Mareca penelope*. On Sept. 28th, for the first time in my life, I saw a Kestrel, *Falco tinnunculus*, make a fierce stoop at a covey of Partridges, and fairly, as we say in falconry, “put them in.” On this day I saw more Goldfinches, *Carduelis elegans*, flocking together than I ever met with before, except in Spain; these must have been nearly three hundred in one flock seen by us. I record this fact, as this species in many parts of England appears to be diminishing greatly in numbers, from the reclaiming of the rough and weedy pasture lands in which it delights. On October 4th, two Landrails, *Crex pratensis*, were seen, and one shot in a piece of strong clover. I have records of the occurrence of this species in November, and once in January, hereabouts, but we generally reckon that they have left by September 30th. Mr. G. Hunt shot a Merlin, *Falco aesalon*, an immature male, the first of

which I had heard this autumn in this neighbourhood. On Oct. 1st, I saw the first Grey Crow, *Corvus cornix*, of this season; since this date we have seen a good many of these northern robbers. Heard Golden Plovers for the first time this autumn; but one of our gamekeepers reported this day that he had seen a "trip" of these birds, passing southwards, high in air, about a fortnight ago. In this connection I may mention that on the 9th March ult., the frost was so intense in this district that Mr. Hunt found three Golden Plovers and several Lapwings, *Vanellus vulgaris*, feeding on a spot from which the snow had been swept in the village street of Wadenhoe, and shot one of the former birds, which fell into a pig-stye, and was recovered with difficulty. We heard a Curlew, *Numenius arquatus*, on the afternoon of October 5th, and Mr. Hunt saw one as he was standing for "fighting" in one of our meadows at dusk; this is an unusually late date for this bird in this district. On the above-mentioned date I received as a present from my friend and neighbour, the Rev. E. M. Moore, of Benefield, Oundle, a good pair of Horned or Slavonian Grebes, *Podiceps auritus* (Linn.), mounted and cased by Rowland Ward, of Piccadilly; these birds were, as the donor informs me, shot in the latter part of February, 1879, on Biggin Pond, near Oundle, and are the only Northamptonshire specimens of their species in my collection, although I have more than once recognised it on our floods, and a good pair, killed on the garden pond at Drayton House, Thrapston, April 10th, 1855, are in the possession of Mrs. Sackville, the owner of that demesne. On Oct. 6th, heard the hooting of Tawny Owls, *Strix aluco*, for the first time since our return home in August, close to this house. On Oct. 8th, Miss A. Eden, of Boughton House, Kettering, reported to Mr. G. Hunt having seen "a brilliant golden and black bird, about the size of a thrush," fly from a yew tree in the garden at that place, about a fortnight ago; this, if not some exotic bird escaped from confinement, can only have been a male of the Golden Oriole, *Oriolus galbula*, a species which has once, to my knowledge, reared a brood of young in our neighbourhood, and I have twice seen alive near this house. Mr. G. Hunt reported having seen on the morning of October 10th a "trip" of some eighty or a hundred Golden Plovers, passing high up our river valley near Wadenhoe. On Oct. 11th, the gentleman above mentioned found and shot two Spotted Crakes, *Crex porzana*, in one of our meadows near Thrapston. This cannot properly be called a common bird with us, and the above is a much later date for its occurrence in this neighbourhood than any which I have on record. It may appear strange to record the death of a Coot, *Fulica atra*, on October 12th, but I do so because this species—common enough on our larger ponds and reservoirs—was never naturally abundant, in my experience, on the Nen. Some twenty or more years ago, being anxious to establish a colony of these birds on our river, I obtained some twenty fresh Coots' eggs from Norfolk, and substituted them for those of the Waterhen in three nests of the latter

bird close to this house. Every egg thus introduced was hatched, and many of the young Coots successfully reared to maturity by their foster-parents; for several subsequent years we had two or three Coots' nests in a mass of flags and sedge at two minutes' walk from the house, and used often in autumn or winter to see ten or a dozen Coots together on the river, but although they were never to my knowledge molested, except by foxes, they gradually disappeared, and till the shooting of the individual above mentioned I had not seen or heard of a Coot on our own waters for at least five or six years. I am anxious to encourage these birds hereabouts, not only as living ornaments to our stream, but because their presence most undoubtedly is a great attraction to "fowl" of all sorts. The bird above recorded was an adult (female, I think), and no doubt "bound for the sea" from one of the large reservoirs in the southern division of this county. On October 13th we noticed the first flock of *certainly* migratory Wood Pigeons, *Columba palumbus*. Our home-bred birds of this species are hardly "flocking" as yet, and will not do so till the acorns—of which we have a locally abundant crop—have fallen; but the birds above mentioned, perhaps some two hundred, had evidently just arrived, and were "all abroad" in the foggy morning. Oct. 15th, the last Hobby, *Falco subbuteo*, seen up to date below. Oct. 16th, first Fieldfare, *Turdus pilaris*, seen and shot.—LILFORD (Lilford Hall, Oundle, October 17, 1883).

Note on *Ægialitis nigris*, Harting.—In 'The Zoologist' for October, I note your article "On a rare African Plover" (pp. 409—418), I do not know whether it is worth while calling your attention to the fact that you will find in my appended note to Finsch's descriptive list of the birds brought back from Abyssinia by me in 1868 (Trans. Zool. Soc., vol. vii., 1872, p. 296) that the perishable colouring of *Æ. tricoloris* exactly tallies with that which you quote as given by Lefebvre (Voy. en Abyss.) from Vignaud's drawing. Von Heuglin's description of the colouring of the legs and feet differs altogether from this, for he describes them as "greenish grey." It may seem a small matter, but I always have held that as small bricks build big houses, correct notification of small, and especially perishable, differences are of importance to those who use the materials so supplied for determining genera and species. With you I think Hodgson's bird *did not* come from India, but is identical with Shelley's bird from West Africa.—W. JESSE (Ionacombe Manor, Morwenstowe, Stratton, North Devon).

[On referring to the paper indicated by Mr. Jesse (Trans. Zool. Soc., vii., p. 296), we find that he has there described the colours of the soft parts in *Ægialitis tricoloris*, Vieillot, the nearest ally to *Ægialitis nigris*, as follows:—"Iris stone-grey, eyelids orange; beak orange at base, black at tip; legs and feet pale pink." Dr. Finsch has added the important remark that Mr. Jesse's specimens of *tricoloris* from Abyssinia "agree with South African specimens from the Cape and Damaraland. Heuglin's *Ægialitis*

cinereicollis (Fauna des Roth. Meer., no. 242), of which I have compared the typical specimen, is not different."

As a distinguished ornithologist has, in a recently received letter, objected to the specific name *nigris*, on the ground that it is not the genitive of *niger*, it may be well to point out that it is not intended as such, but is the genitive of the more classical name for the Niger, viz. *Nigris*, *is*.—ED.]

Migration of Wagtails.—An extraordinary visitation of the common Pied Wagtail took place here on Sept. 23rd, a little after 8 p.m. Attracted by the gaslight, numbers of these birds flew in through the open windows of several rooms in the United Services College, where they fluttered wildly and helplessly about, battering themselves like so many large moths against the ceiling. In one room alone there were as many as thirty. The night was dark and stormy, and it is not improbable that these birds, which breed in abundance in the cliffs along Bideford Bay, had been across the water to Lundy for the purpose of feeding, and in their return home had lost their way in the darkness and rain, and then made for the beacon afforded by the long line of gaslights at the College. If this be not the explanation of the case, the birds must have been really migrating, and that in a south or south-easterly direction (the windows face north); for though the Pied Wagtail is not strictly a migratory bird, the fact that all birds migrate more or less, if only from one part of the island to another, is becoming every year more firmly established. The occurrence will then only be an exceptional instance of what happens so commonly at lighthouses during the spring and autumn migrations.—H. A. EVANS (Westward Ho, N. Devon).—*The Times*, 2nd Oct. 1883.

[The periodical migration of the Pied Wagtail, as observed in Sussex, has been well described by Mr. A. E. Knox in 'The Zoologist' for 1843, and in his 'Ornithological Rambles.'—ED.]

Waders on the South Coast.—While staying some time at St. Leonards lately, my son and I made a few expeditions with our guns to Rye Nook and on by the Midrips towards Lydd. We got most of the usual Waders, and other species of birds which I have seen there for the last thirty years. On August 23rd I shot two Dusky Redshanks out of a flock of five. On the 28th Common Terns had taken their departure, many Little Terns still remaining, and Sanderlings had arrived. On Sept. 3rd, at Bexhill Marsh (no guns), we saw a Grey Phalarope (an early arrival) swimming close to us in a small strip of water: it kept uttering a little sharp "twit twit" at short intervals. We also saw there a Bar-tailed Godwit. On Sept. 4th my son killed a Golden Plover at the Midrips, surely a very early arrival so far south. On Sept. 13th we got a Little Stint (*Tringa minuta*), and some Oystercatchers on the shore. We found that on the 5th one of the

fishermen had shot four out of seven Godwits, and, being rather puzzled with their large size and dark tails, had sent them to a birdstuffer at Hastings. I afterwards went to see them there; they were four Black-tailed Godwits, now very rarely found in these parts. At our last visit we were told there were some Dotterels (*E. morinellus*) somewhere about the place, but it is of large extent, and we could not hit them off. On the 18th, Bristow, the St. Leonards birdstuffer, showed me a very curious piebald Lapwing that had been sent him from Pevensay. — ROBERT H. MITFORD (Weston Lodge, Hampstead).

Tufted Duck and Common Tern in Oxfordshire.—Strolling round Clattercutt Reservoir on October 7th, I noticed a dark-coloured duck among some Coots upon a distant part of the water. I walked down, under cover of a thick hedge, and contrived to get within some thirty yards of a fine adult male Tufted Duck, *Fuligula cristata*, which, with the aid of a glass, I was able to see very clearly. It appeared rather uneasy at first, being alarmed by the sudden rising of a Mallard from the reeds, but soon settled down and began actively diving for food. It had acquired the full black and white winter dress, and looked very handsome, and very different from those I saw in Nottinghamshire in August. With us in North Oxon it is decidedly a rare bird. In December, 1878, I saw a male, in the flesh, which had been taken on this water, and I have heard of one other occurrence. In the south of the county, near the Thames, it is rather more often met with. A Common Tern was shot by a boatman on the canal near Banbury on Sept. 12th.—OLIVER V. APLIN (Great Bointon, near Banbury, Oxon).

The last Great Auk.—It is generally supposed that this bird has been extinct for the last forty years. In the 'American Naturalist,' however, for 1872 (vol. vi. p. 369) there appears a notice of one which was found dead on the Labrador coast in 1870. The writer of the notice, Mr. Ruthven Deane, says:—"While at Montreal, in August, 1871, Mr. Alfred Lechevallier, a naturalist who has collected largely in Labrador, informed me of a specimen of this supposed to be extinct species. It was found dead in the vicinity of St. Augustin, Labrador coast, in November, 1870, by some Indians, from whom Mr. Lechevallier obtained it while collecting there at the time. It was a male, and, although in a very bad state, he preserved it, and has recently (1872) sold it to a naturalist in France, who is to send it to Austria. Although it was a very poor specimen he realised two hundred dollars." We should be glad to know whether any of our readers have seen this specimen, and can add anything further to its history; also whether they can inform us where it is now deposited.—ED.

Prehensile Feet of the Crow.—Having lately read an interesting letter printed in 'Science' (vol. ii. p. 265), under the above heading, I was rather struck yesterday (Oct. 2nd) by seeing a Crow which I disturbed

from a meadow rise with some large object in his claws; he was comfortably wheeling away when I ran after him, and by holloaing made him drop his load from a good height; this proved to be a very fine Lark, with the head and neck eaten off.—EDWARD A. FITCH (Maldon, Essex).

[We have frequently observed Crows and Rooks breaking mussels by rising with them into the air and dropping them from a height.—ED.]

Attachment of Magpie to Nesting Site.—Last spring a Magpie nested in an apple tree in an orchard near Southwell, Notts, and laid eggs. I went one day to try and shoot the old bird on the nest, and, as she was not there, fired a couple of barrels into the nest, presumably breaking the eggs. Shortly afterwards I was told she had built in the very next tree; and in this new nest she laid again and hatched.—E. F. BECHER.

Osprey in Lincolnshire.—On September 22nd I received a beautiful specimen of the Osprey, which had just previously been shot in South Lincolnshire. It measured five feet in the expanse of the wings, and weighed nearly three pounds. It is a male, and in perfect feather.—J. CULLINGFORD (University Museum, Durham).

An Albino Blackbird.—On August 13th I examined a perfect albino of the Blackbird. It was an under-sized bird, which had been caught a few days before at Stratford, Oxon, and lived in a cage until that morning. The plumage was snowy white and the feathers remarkably delicate; irides, feet, and legs pale pink. The bill was the only part which showed normal colouring, and the yellow of this was curiously suffused with a pink tinge.—OLIVER V. APLIN (Great Bointon, near Banbury).

FISHES.

Sharks on the Coasts of Devon and Cornwall.—During the month of September a large number of sharks have been seen, and several captured, off the coasts of Devon and Cornwall. On the 12th of that month a fine Blue Shark, *Squalus glaucus*, measuring between seven and eight feet in length, was caught in a drift-net near the Eddystone Lighthouse, and brought into Plymouth. Its colour on the upper parts was of a fine blue, which by the next day had changed or faded to a leaden hue; the under parts and insides of the fins were nearly pure white. About the same date a large Thresher, or Fox Shark, *Squalus vulpes*, fully fifteen feet in length, was being exhibited about the streets in a cart; and I also heard of many other sharks of various kinds having been caught, but none of them were preserved for our local museum.—J. GATCOMBE (Stonehouse, Plymouth).

Heavy Perch.—On the 3rd of September last I had a Perch sent me which turned the scale at three pounds and a half. It is considered

a heavy fish for this river (the Avon); but an old fisherman, who has known the river many years, informed me that he once saw one caught which weighed nearly five pounds, and yet he tells me it is considered a very good fish to weigh two pounds and a half. The dark markings upon the back and sides of the fish I had were very indistinct. Is it the case that these heavy fish are old, and that they lose these markings, in some degree, with age?—G. B. CORBIN (Ringwood, Hants).

Large "Sea-purse" or Egg-case of the Ray.—Having lately found what I consider to be an unusually large "sea-purse" or egg-case of the Ray, washed ashore near the Devil's Point, Stonehouse, and never having before—among the hundreds I had previously picked up along the sea-coast—seen any at all approaching it in size, I think its dimensions are worth recording. Including the horn-like processes at either end,—two of which are short and not worthy of being called "tendrils,"—its entire length is about fourteen inches and a quarter, and the oblong body nearly six inches and a quarter long by five inches and a half broad. Were it not so broad in proportion to its length, I should suppose it to have been shed by a very large shark —J. GATCOMBE (Stonehouse).

MOLLUSCA.

Oyster Culture in America.—It appears that Mr. Ryder, the Embryologist of the U.S. Fish Commission, has solved the problem of the culture of Oysters from artificially impregnated eggs, and at the beginning of September, at the U.S. Government Station, Stockton, Maryland, there were millions of young Oysters three-quarters of an inch in diameter, which had been hatched from eggs artificially impregnated forty-six days previously. In 1879 Dr. Brooks, of Baltimore, had succeeded in artificial impregnation of the ova; but the difficulty, now overcome, was to prevent the young Oysters after hatching from escaping and being lost, for the spat will pass through the meshes of the most finely-woven fabrics.

ZOOPHYTES.

Large Jelly-fish.—While with my three boys on the shore below the lighthouse at Hunstanton, St. Edmunds, Norfolk, in August last, the youngest one drew my attention to a specimen of a Jelly-fish, which far exceeded in dimensions any I had hitherto seen. Its measurement was carefully taken and ascertained to be twenty-one inches by nineteen inches and a half. The mauve ribbon-like border near the outer edge, common in smaller specimens, was in this instance—as also in some others that I have seen—replaced by one of a ferruginous tint.—F. A. WALKER (33, Bassett Road, Notting Hill).

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THE GREATER SPOTTED WOODPECKER IN CONFINEMENT.

BY THE REV. H. A. MACPHERSON, B.A.

ON July 7th, 1883, I received a young living male of the Greater Spotted Woodpecker from Mr. M. Heogh, of Campden, Gloucestershire, who informed me that it had been captured "after leaving the nest, in a bunch of stinging-nettles, on a place called Dovers Hill, two miles from Campden." He had kept it himself "about a fortnight," and believed it to be "about six weeks old" when he sent it to me. I scarcely think that it was quite so old, but it must have been a much earlier bird than those mentioned by Lord Lilford (p. 427) as taken from the nest on July 17th, 1883. The nestling plumage was quite normal, but the flanks were certainly "indistinctly streaked," as Yarrell says is the case in some examples (*Brit. Birds*, vol. ii. p. 476).

When first placed in my aviary it was unable to stand, the limbs being cramped by long confinement in a shallow box. In a short time, however, it had sufficiently recovered to demolish a saucerful of bread and milk. When I came in, it ran up a strip of cork bark, moving thence to cling to the wires of the cage-dome and its flat corners; presently it assumed a posture of repose, clinging back downwards to the under surface of a broad natural bough placed horizontally across the dome, the head and tail being thus in the same plane. About 7 p.m. it showed symptoms of drowsiness, and buried its head in the

interscapular feathers, clinging to the top of the virgin cork, tail downwards.

A female of the common Nuthatch, inhabiting the same cage, displayed some fear of the stranger, but no sooner did he appear to be asleep than *Sitta* began to tap the cork immediately beneath him ; as he was too tired to be easily roused, she ran up to his side and gave him a sudden dig in the ribs with her long bill. *Dendrocopus* awoke with a snap of protest, and his enemy fled precipitately. The Nuthatch was a good deal "put about," because the Woodpecker had seized her favourite roosting-place, but, finding that "might makes right," she betook herself sulkily to the highest bough in the cage.

On July 8th the Woodpecker made a hearty breakfast of *pain au lait* ; I threw some mealworms on the cage-bottom, but, though he eyed them covetously, he would not descend to pick them up. Finding that he fenced vigorously with a stick, which I was stirring him up with, it occurred to me to split its extremity and to insert a mealworm into the cleft. He seized the first thus pushed to him, but dropped it with a little cry of surprise ; I then offered him six more mealworms, after which he expressed the satisfaction of his "inner man" by tapping vigorously on the bark, not to drive out insects, but purely to express his feelings, just as the Nuthatch beats a "tattoo" if she has swallowed a sumptuous bluebottle. As I write (July 8th, 2 p.m.), the Woodpecker is flitting from one strip of cork to another, uttering a cry which may be rendered "cack, cack"; from time to time he darts his long tongue into the crevices of cork. He takes a special pride in preening the feathers of the under parts ; the tail and wings are carefully touched up, the latter being often stretched across his feet. Already he is actively stripping the bark off the dome's perch.

July 9th. It is noticeable that when the Woodpecker wishes to descend, he slides down the cork in jerks, tail downwards, like his wild brethren, in contradistinction to the Nuthatch. Strawberries pushed to him in the cleft-switch he accepts gratefully ; a moment ago he nearly choked in trying to swallow a large husk, and, now that his shyness is working off, he accepts the fruit and also mealworms from my fingers.

July 10th. When I came down to breakfast the Woodpecker flew to the side of the cage to meet me, and took six grubs from

my fingers ; unlike *Sitta*, he will not descend to pick up a grub if he drops one.

July 10th. Weather very hot, and the Woodpecker is nodding on the cork at 10 a.m., now waking up with a start, then drawing his eyelids apologetically over the bright irides to doze again. He does not kill the mealworms before bolting them, but likes me to crush their heads.

July 11th, on coming down, I called " Jack," and he responded at once and flew to receive mealworms. He rejected some hard-boiled egg, but partook of some crumbled cracknel biscuit, dry. At lunch he tried some sweet biscuit, moistened in my mouth, darting his tongue between the wires to take it off my fingers, and giving me an admonitory peck when the supply threatened to run low.

July 12th. When my landlady brought in the Woodpecker's bread and milk, about 7 a.m., he flew to the cage side to meet her : to tease him she placed the saucer on the hearthrug, in full view of him, and left it ; thereupon he set up a clamour of displeasure, like a spoilt child. Despite his boldness at meal-times, the wild instincts are never long forgotten ; thus, if I approach him when conversing with any one, as soon as I am near the cage he feels an imperative impulse to duck behind the bough on which he is perching, so as to keep it between him and me, and thus to conceal himself.

July 13th. The Woodpecker has taken the pulp of some black cherries from my finger tips. At 2 p.m. I gave the birds some broken hazel nuts : the Nuthatch stealthily carried one off and placed it in a chink in the cork ; *Dendrocopus* " spotted " it at once, and flew to *Sitta* with a cry of glee ; away flew *Sitta*, and the robber pretended to consume the kernel. *Sitta's* courage mustering, she betook herself to the cage-floor to pick up the small chips of nut dropped by the Woodpecker, which, after this piece of tyranny was accomplished, refreshed himself with his afternoon bath. I am much struck by the adroit way in which he catches a morsel of food which he has let drop : he does so either on his chest pressed suddenly to the bark to intercept it, or across the tarsi ; on more than one occasion I have seen him move a leg to intercept a falling mealworm, and this with unvarying success.

On July 14th he began to kill the mealworms for himself,

passing them across his mandibles until thoroughly crushed, taking special care to break the head.

July 17th. He has cast a few feathers. When the gas is lighted at night he wakes, plumes himself, and then returns to sleep. He has now wrought considerable havoc on the woodwork of the cage, and quite a pile of fresh cork chips lie on the cage-floor. The most important of his excavations are planned and executed before breakfast. He always flutters his pinions when he thinks he should be fed: he prefers anything that I am eating to the food already in his cage.

July 20th. The Woodpecker is now really interested in nuts, and eats them readily. The Nuthatch has now lost her fear of him, and often springs to the bark beside him, though she never stays long; he always makes an unsuccessful dash at her if he thinks that she is within reach. He is now flying actively about the cage, sometimes giving vent to a loud clattering cry, which I have not heard at other times; he often startles the other birds by the abruptness of his movements.

July 22nd. A house-fly has just approached the aviary cage (6.45 p.m.); the Woodpecker became much excited, but failed to secure it. He appeared to be perishing of hunger when I came down this morning, at 7.30 a.m., and accepted some mealworms; he professed great joy at my return from church, and asked for some plum-cake, on which he lunched heavily, but of which he rejected the lemon-peel. Subsequently he grew comatose, and dozed for twenty minutes; then rousing himself, he hammered away on his anvil, making the chips fly merrily, until I went out. Probably Woodpeckers naturally rest a good deal, for they can hardly be always in motion. My bird knows meal-times perfectly, and looks out sharply for five o'clock tea.

July 23rd. The Woodpecker, being rather apathetic and my mealworms growing beautifully less, I reduced him to-day to three grubs; he declined to be put off with "half commons," and demanded the completion of the treat. I offered him a morsel of egg; he seized it, instantly jerked it to the other end of the cage, and the next instant made a ferocious dig into my forefinger. He reproached me for many minutes, and then, by way of revenge, betook himself to the task of disintegrating the framework of his prison.

July 26th. After performing his ablutions, which he always enjoys immensely, the Woodpecker clings to the bark almost motionless until half-dried, when he begins to plume himself. He has now begun to develop secretive tendencies. His supply of bread and milk ran short in my absence yesterday; consequently he had reproached my landlady (who discovered the oversight) with additional bitterness, because there was no five-o'clock tea that day. To-day he has stowed away, in crevices of the cork, all the bread and milk that was left after his breakfast. He has eaten some red currants to-day, their skin being first broken: he generally bolts the skin and pulp together.

July 29th. After lunch to-day I gave the Woodpecker some mealworms, all of which he crushed, even one which had only just shed its skin. "Jack," I said, "do you want a grub, old fellow?" "Kuck, kuck!" he responded; "indeed I do." He then pecked my finger for more. He is, however, losing much of his tameness with me; he has never lost his dread of strangers, my landlady (a precious soul, as fond of the Woodpecker as myself, and ever as solicitous for his comfort as for mine) being the one person besides me whom he trusts. We form, in fact, a "triple alliance"; but if either of the bipeds approach him in unwonted head-gear, his confidence flies at once. He recognises me best by my voice, but knows my footstep also, and calls me if he hears me open the door quietly with my latch-key.

On August 4th I placed the Woodpecker in a small outdoor aviary. Being heavily taxed with parish work, I found less time than ever to bestow on him, and he became very wild and shy, at least comparatively so. When I entered the aviary, I used to see a bright diamond iris peering cautiously round the tree-trunks; if I was alone, he sidled round and took the mealworms from my fingers; if I placed them in a small pan, he would descend to *terra firma* and carry them back to the tree. Only once during all my study of him did he descend to the ground to pick up a dropped insect; the exception occurred in the aviary, and it was after an unsuccessful attempt to catch it across his legs. On the ground, as on lattice-work, he progressed by hops. He generally slept in the corner of a ledge, under the eaves of the aviary. Both in the cage and aviary he occasionally sat crosswise on a bough, a trait that I have noticed in the wild state in Newnham Park, near Oxford. He lived on excellent terms

with the small birds in my aviary, though, when kept indoors, he showed a great hatred to some young Red-backed Shrikes.

I happened to leave Carlisle for a few days in August; when I started on the 23rd the Woodpecker seemed as well as possible, and it was a great sorrow to find him very poorly when I returned on the 29th. As soon as I entered the aviary on the latter day he sidled round the trunk to meet me, but he was manifestly very feeble, suffering from dysentery, which I could not stop.

On the 30th he flew to the ledge over the door to meet me, and took some mealworms with the cry of "ack, ack," which Mr. William Duckworth compared to the cry of a young Jackdaw.

On Sunday, Sept. 2nd, I found him on the same ledge, his head buried in his feathers. He looked up to greet me, with a series of little cries for sympathy, but was too weak to swallow a mealworm: half an hour later I found him dead. His constitution had been weakened by moulting (he died mid-moult), and he may have induced the complaint by fretting for me, as he was so much attached to me. Had I been at home when the attack first occurred, I have little doubt that I should have saved his life; but the diet of bread and milk, nuts, and fruit, which was all that he would take regularly, in addition to insects and a little strawberry-jam, was not sufficiently nourishing for a period so trying as that of the moult. Had he been taken younger, he might have been reared on egg and beef, but unfortunately he would never eat meat or any other nutritive substance.

Examples of this bird have been acquired by the Zoological Society at pretty frequent intervals since 1863; but I am not aware that such specimens, as I have myself seen there, were long-lived.

I have endeavoured to cut down my notes as much as possible; as they now stand I venture to hope that they may not be without interest, since, as Mr. Gould wrote in 1873, "we really know but little respecting the actions of even our commonest Woodpecker."

AN AUTUMN VISIT TO SPITZBERGEN.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

(Continued from p. 448.)

WE were so much detained by calms and contrary winds in our little sailing-vessel, during our six weeks' voyage, that our opportunities for observing and collecting were not great. While we saw, on the whole, more mammals than in 1881, the number of birds could hardly have reached one-tenth per cent.; and while the number of species of mammals actually seen in Spitzbergen was less by one (the White Whale) than in 1881, the number of species of birds obtained this year was only thirteen, the species which we believe we saw, but of which we did not obtain any, amounting to ten. The mammals met with were—

Arctic Fox, *Vulpes lagopus*, Linn.; Norwegian name, "Ræv."—Ubiquitous and numerous. Tracks seen in the snow at the outer end of Green Harbour, and two very tame specimens seen at the inner end (Sept. 9th). A fox had taken up its quarters under the house at Cape Thordsen, tenanted by the Swedish Meteorological Expedition before the date of our visit (Sept. 12th), and seemed to consider himself under their protection. When we communicated with the Expedition again, on Sept. 19th, they told us that they had trapped two foxes in the interval. We watched the movements of one for some time at Sassen Bay, on the 16th, and saw him feeding on a dead Reindeer-calf. One came within gunshot of the smack on the morning of Sept. 23rd, when we were lying at anchor in Recherche Bay, and a Norwegian white-whaler who followed us into this shelter had two live cubs on board which had the run of the deck, and it was very pretty to watch them, from our smack, at play.

Polar Bear, *Ursus maritimus*, Linn.; Norwegian, "Is-Björn."—Some bear-meat in casks at Green Harbour, a skull seen by M. Rabot at Sassen Bay, and a human grave opened by this species at Recherche Bay, were the only signs of this animal met with by us.

Ringed Seal, *Phoca hispida*, Schreber; Norwegian, "Snad."—As last year, a good many were seen while we were on the Spitzbergen coast, but not enough to be called numerous.

Great Seal, *Phoca barbata*, Fabr.; Norwegian, "Stor Kobbe."—More seen this voyage than in 1881, though that is not saying much. The tenacity of life in this species is remarkable, as recorded before.

Walrus, *Trichechus rosmarus*, Linn.; Norwegian, "Hvalros."—Our cook reported seeing one in Sassen Bay on Sept. 18th; Arnesen would not believe it, but the cook, though a young hand, had been several voyages to the Arctic after Walrus and Seals, and may be supposed to know a Walrus when he saw one; he declared positively that he had seen it, and added that it was apparently an old one, with one long tusk and the other broken. Arnesen told me that one may often see thousands of Seals and Walruses lying on the ice, but directly it comes on to rain they all disappear into the water, but of snow they take no notice. Walrus-tusks, according to Arnesen, fetch in Tromsö 2 kr. (= 2s. 3d.) per lb. English; walrus-hides, 5, 7, to 12 öre per lb. (= from nearly $\frac{3}{4}$ d. to about $2\frac{1}{4}$ d.); and their blubber, 40 kr. (= £2 4s. 6d.) per barrel.

Whales.—In 1881 I was inclined to believe that we had seen four species of "Finner" Whale between the Lofotus and Bear Island; but this voyage from Tromsö northwards, I am inclined to think—influenced by the opinion of our captain, Arnesen—that we only saw *one* species of whale (the Porpoise and White Whale I shall have to mention lower down); at any rate, all that we saw were alike called by him "Blaa Hval," and I could perceive no difference between the various examples. I think there can be no doubt that they were a *Balenoptera*, and it is most probable that they were all *B. Sibbaldii*. On August 27th, immediately to the north of the Norwegian coast, we saw five whales, the last of which was rather a large one, and we could hear him blowing distinctly when more than a mile (English) off, in about lat. $70^{\circ} 40' N$. Early the next morning Arnesen saw a large whale in about lat. $70^{\circ} 55' N$.; on the morning of Sept. 1st he saw one when we were about thirty-three or thirty-four miles N.W. of Bear Island, and plenty of drift-ice all about. Later in the day, when we had steered W. and afterwards S.W. to avoid a ribbon of ice, and when we had just reached its westernmost point, we saw one close to the ice, and the spout of one or more just beyond. On the 3rd, in about lat. $75^{\circ} 28'$, two were observed; after this none were seen until we had again left Spitzbergen to the

north of us, when, between 2 and 3 a.m. on the 28th, a small one was seen, and a large one about 11.30, our latitude at noon being $75^{\circ} 11' N.$; also a small one about 8 p.m. on the same evening.

Porpoise, *Phocæna communis*, Cuv.; Norwegian, "Nise."*—A "school" reported by Arnesen early on the morning of Sept. 28th, between 2 and 3 a.m., on our way south; lat. at noon, $75^{\circ} 11'$.

We did not see a single White Whale, *Delphinapterus leucas*, Pallas, during the voyage, and the vessels engaged in this "fishery" on the Spitzbergen coast had a very bad season, chiefly, I believe, on account of the ice remaining along the coast until late in the season. Ingebretsen, captain of the 'Hvitfisk,' whose large capture in 1881 I mentioned in my former paper, this season only captured twenty-five! The "skjøite" which followed us into Recherche Bay, had a similar number, and others I was told had even less. One cannot but be very sorry for the crews, who are paid in shares on the "take," and who find themselves, after five months or so of an extremely rough, hard life, with nothing but the small percentage on twenty-five Belugas to repay them, and keep them through the winter, and until they can get afloat again about the following May.

Reindeer, *Rangifer tarandus*, Linn.; Norwegian, "Rensdyr."—There can be no question that the Reindeer of Spitzbergen are much smaller animals than those of Scandinavia. Owing to the enormous amount of fat they possess in autumn, and perhaps, in a lesser degree, owing to their long, almost shaggy coat, the Reindeer of Spitzbergen are rather different looking to those of Scandinavia, and have a somewhat "cart-horsey" or "cobby" appearance. The long winter hairs are nearly white, and these, thickly interspersed with the rest of the coat, make the colour of the Reindeer rather silver-grey. The following are the lengths of Reindeer which I measured as soon as shot, before they had stiffened:—Males, 59 to 62 in.;† females, 53 to $63\frac{1}{2}$ in.;‡ male calf (September), $51\frac{1}{2}$ in.; female calves (September), $45\frac{1}{2}$ to $48\frac{1}{2}$ in. I am rather ashamed of having calves to record, but personally

* The Greenland name "Nisa," given by Bell, must surely have been adopted from the Danish.

† No particularly good buck was obtained, and out of the large number of deer met with only one really good one was seen (by M. Rabot).

‡ This specimen was of unusual length, most of the specimens being under 60 in.

I only shot one calf, which, in the momentary glimpse as it was making away, I mistook for a sizeable animal. Cast antlers, besides living deer, were very numerous at Sassen Bay, while at Cape Thordsen, only a few miles distant, we found numerous cast-horns, but live deer—according to Lieut. Stjernspetz, of the Swedish Meteorological Expedition—were entirely absent. I have tried to ascertain some constant point of difference between horns from this country and Scandinavia, but can only say that the horns, like the animals that bear them, never attain the size in Spitzbergen that they do in Scandinavia, and a series of horns from Spitzbergen show rather a longer interval between the brow and next tine, and a greater bend backwards at the point whence the latter tine starts; but these points are only perceptible in a series, and are worth nothing in determining the locality of a single specimen. One doe obtained by us had only one horn; another had the horns, as it were, placed the wrong way forwards, the convex side being to the front, and the only tine on each projecting from the back of the horn. I suppose that the apparent beam is really the brow-tine, and the apparent tine is really the beam.

The following were the species of birds obtained by us in Spitzbergen in 1882:—

Ptarmigan, *Lagopus hemileucurus*, Gould; Norwegian, "Rype."* —When we visited the Swedish Meteorological Expedition at Cape Thordsen, we found that Lieut. Stjernspetz had shot about eleven on September 10th, of which he most kindly gave us four, and on our calling in at Cape Thordsen again we found that he had seen four more on September 18th, and had bagged them all. They are far larger in the body than the common European Ptarmigan, and having in the autumn a layer of fat fully a sixteenth of an inch thick over the whole body, presented a *bonne bouche* almost worth an alderman's while to go all the way to taste. At Sassen Bay, on September 14th, we found a covey of ten Ptarmigan, and secured five, and later in the day a single bird; plenty of their tracks were seen subsequently in the snow, but no birds. The specimens which I brought home this last season (killed in

* The European Ptarmigan are distinguished from the Willow Grouse by being called "Fjeld-Rype" (in Gudbrandsdalen "Fjeld-Skarv"), but there being only one species in Spitzbergen they are simply called "Rype."

September) are much more advanced towards winter plumage than those obtained in 1881 (at the end of July), though still by no means in good feather. Specimen No. 1, killed by Lieut. Stjernspetz at Cape Thordsen on Sept. 10th, has only three coloured feathers remaining on the under side—one on the throat and two on the upper part of the breast; No. 3 (probably a forward male bird of the year) has only about a dozen, in the same positions, with two or three coloured feathers on the sides under the wings; and the others have rather more, down to No. 4 (young), which is only white on the belly, quill-feathers of the wings, and upper wing-coverts. No. 6 has the majority of the feathers on the back coloured, while Nos. 1 and 3 have only a few coloured feathers remaining. All the specimens, except No. 1, were shot by me at Sassen Bay on Sept. 14th. They have two cœca given off about four inches above the rectum, and each over a foot long. The measurements of wings given by Messrs. Dresser and Sharpe ('Birds of Europe') vary between 8·7 and 9·1 inches. The wings of the specimens I brought home last year measure as follows (the right wing being in each case measured):—No. 1 (male), $8\frac{7}{8}$ in.; No. 2 (male), 9 in.; No. 3 (young male), $8\frac{1}{2}$ in.; No. 4 (pull.), $7\frac{3}{4}$ in.; No. 5 (female), $8\frac{1}{2}$ in.; No. 6 (male), $8\frac{7}{8}$ in. The length of the wings of my specimens of 1881 was given in my paper in 'The Zoologist' for 1882 as "about $9\frac{1}{2}$ inches." This should have been "about 9 inches." The only skin of the Willow Grouse I have by me (a good male specimen) measures $8\frac{5}{8}$ inches in the wing. The Common Ptarmigan measures, according to Dresser, from 7·2 to 7·8 inches in the wing. My specimens measure between $7\frac{1}{4}$ and $7\frac{3}{8}$ inches. The following are the measurements of some sterna:—*L. hemileucurus*, length of keel, following the curve, No. 1, $2\frac{5}{8}$ in.; No. 2, $2\frac{3}{8}$ in.; No. 3, $2\frac{1}{2}$ in.; No. 4 (the sternum of this young specimen is not yet fully ossified); No. 5, $2\frac{5}{8}$ in.; No. 6, $2\frac{1}{8}$ in. Length in a straight line about one-eighth of an inch less than the above measurements. *L. mutus*, keel following the curve, No. 1 (female), $2\frac{11}{16}$ in.; No. 2 (female), 3 in; in a straight line, No. 1, $2\frac{11}{16}$ in.; No. 2, $2\frac{3}{4}$ in. *L. subalpina*, male, keel following the curve, $3\frac{1}{2}$ in.; in a straight line, $3\frac{1}{16}$ in. Malmgren (quoted by Dresser) says their food consists of *Saxifragæ*, *Salix polaris*, flowers, flower-buds, and leaves of *Dryas octopetala*, and "in its crop I found nothing but fresh remains of *Dryas*." I brought home a chaotic mass from the crops and stomachs of Spitzbergen

Ptarmigan, which I have submitted (together with such plants as I collected) to Prof. Oliver, of Kew. He has kindly written me word that the "dominant remains belong apparently to *Cerastium* and *Draba*." I have since had the remains sown, but so far there has been no result.

Purple Sandpiper, *Tringa maritima*, Linn.—Twice during the afternoon of August 29th, just after we had cleared the coast of Norway, a Purple Sandpiper flew close round the smack and seemed to wish to alight on board, suggesting the idea that it might be tired after migration from Spitzbergen. This species formed an exception to the general rule, and was perhaps seen in larger numbers than in 1881, though it may have been owing to the fact that having found out that they were excellent eating (as good as Snipe they seemed to us) we rather cultivated their acquaintance, instead of ignoring their presence, for oddly enough they stood the indifferent *cuisine* of our smack better than larger birds; our largest bag being three dozen, shot in Recherche Bay, Sept. 22nd.

Arctic Tern, *Sterna macrura*, Naum.; Norwegian, "Tenne" (Dictionary, "Terne").—About a dozen on Sept. 1st, near Bear Island; a good many—almost all adults—in Green Harbour on Sept. 9th, after which I have no note of so much as a single Tern, and have no recollection of seeing any.

Kittiwake, *Rissa tridactyla*, Linn.; Norwegian, "Krykja" (Dictionary, "Krykke").—Though not otherwise than common, were nothing like so numerous or generally distributed as on my former voyage. On several days none at all were seen, and on others only "one or two" to "a few."

Glaucous Gull, *Larus glaucus*, Gm.; Norwegian, "Graa-Maake," "Stor-Maake" (pronounced "Maase").—A good many seen when near Bear Island on Sept. 1st, a large majority being young of the previous year. Two or three off Edge's Land on the 5th. A few seen at intervals during the rest of the time we were in Spitzbergen, the last being two immature specimens on Sept. 30th, when at sea in about lat. 73°. A bird of the year, which was slightly wounded by M. Rabot in Recherche Bay on Sept. 24th, was kept on board alive, and taken home by M. Rabot on his return to Paris, and presented by him to the Jardin des Plantes, where, as he lately wrote me word, it continues to flourish.

Richardson's Skua, *Stercorarius crepidatus*, Vieillot; Norwegian, "Tyvjo."*—There were several in the neighbourhood of Bear Island on Sept. 1st; two or three on the 3rd, midway between Bear Island and South Cape; two off Whale Point, Edge's Land, on the 5th; and others every now and then afterwards. The last we saw were two or three some few miles north of the Norwegian coast, on Oct. 2nd. A bird of the year, shot on Sept. 15th, is very different from the specimen described by Dresser ('Birds of Europe'), having no "warm ochreous" colour on the crown (or elsewhere), but agrees very tolerably with the description in Yarrell (Brit. Birds, 3rd edit. p. 633), except that it has a small light-coloured patch immediately under the lower mandible, and the lower part of the breast and the belly are light coloured.

Fulmar Petrel, *Fulmarus glacialis*, Dresser ('Birds of Europe'); Norwegian, "Hav Hest."—Began to see Fulmars as we cleared the Norwegian coast, on August 27th, and they were numerous by a few hours later, when we had passed the last point of the coast; after that we saw each day a varying number, which decreased as we approached the Norwegian coast on our homeward passage, and we saw the last—a solitary bird—two hours before sighting land on October 3rd. Out of the thousands of Fulmars met with in 1881 I came to the conclusion that we had not met with so much as one fully adult example. This voyage I saw several, and brought home one example that I supposed to be adult; but even this does not agree with the descriptions in Yarrell (3rd edit.) and Dresser. The bill is very slightly lighter-coloured than that of the apparently youngest specimen brought home in 1881; head and neck, all round, dirty white; breast, belly, and all the under surface of the body, the same—doubtless partly the result of staining, but the feathers could never, I think, have been "pure white" (as Yarrell's description); tail-coverts very light pearl-grey; tail itself almost white, but with a tinge of pearl-grey; the back and wings a lighter shade than my former specimens, but hardly "pearl-grey"—a "dirty pearl-grey" perhaps expresses it; the tips of the primaries darker, not differing from the other specimens.

* The name "Struntjager," mentioned by Nordenskiöld, is known to the ice-sea men, but I never heard any name but "Tyvjo" used.

Eider Duck, *Somateria mollissima*, Fleming; Norwegian, "Eder," "Ederfugl," or "E'er."—Just after passing South Cape, going northwards, a good many ducks and young were met, as if making southwards; after that a few were seen on some four occasions, forming a great contrast to the state of the case in the summer of 1881. The only drakes noticed were those immature examples in Recherche Bay on Sept. 22nd. The flocks with numerous drakes seen in Vaudvaag, on the north coast of Norway, were doubtless natives of that neighbourhood.

Red-throated Diver, *Colymbus septentrionalis*, Linn.; Norwegian, "Lom."*—Specimens of *Colymbus* were not infrequent this year, being one of the few birds of which more were seen this voyage than last, when only one was met with. I obtained one of a pair—a small adult female—in Green Harbour on Sept. 9th. Capt. Steenersen, of the 'Isbjörn,' told me he shot one (I suppose this species) the previous week; and Lieut. Stjernspetz shot one at Cape Thordsen on Sept. 10th, which I saw when we were there on the 12th. We saw several more Divers at Green Harbour on Sept. 9th, probably of this species; one on the 13th at Sassen Bay, and four or five others, probably of this species, while we remained at anchor there.

Mandt's Guillemot, *Uria Mandti*, Dresser ('Birds of Europe'); *Cephus Mandti*, Newton ('Ibis,' 1865); Norwegian, "Tejste."—A solitary young one was the first of this species seen this voyage, near the ice off Whale's Point, the south-west corner of Edge's Land, on Sept. 5th. Next day, when standing in a S.W. direction from Stor Fjord for the South Cape, four young birds were seen, and later in the day one adult, the first during the voyage. None seen by me in Green Harbour on Sept. 9th, but M. Rabot obtained a young example. The next day, while beating up Is Fjord, we saw three young ones. On the 11th, while still beating up the Fjord, M. Rabot and I each secured a young specimen; four or five, all young, were seen. A few young ones seen in Sassen Bay on Sept. 14th. In Recherche Bay, on Sept. 22nd, I secured another young specimen, and could have shot several others; saw altogether a dozen or more young ones. One, while we were

* This name is also used for the Black-throated species, which is distinguished as the "Stor-Lom," the present species being called "Smaa-Lom," while the Great Northern Diver is not looked upon as a "Lom" at all, but known as "Imber."

lying on our oars waiting for the reappearance of a Seal, swam up within reach of an oar, and remained there without any fear. I believe I also saw one adult example; I am tolerably sure that all the others were young, and not adults in winter dress. Early on the morning of the 24th—still in Recherche Bay—I saw five young ones together, and later M. Rabot obtained another young example from the deck; and later again we saw three or four young ones in the Fjord. This very scanty list shows that the adult birds of this species had almost entirely left Spitzbergen before the date of our arrival; the few young ones met with were, I suppose, late birds left by the parents to find their own way south when sufficiently grown to attempt it. The black Guillemots seen off the Norwegian coast at the beginning and end of the voyage were, no doubt, *Uria grylle*, though where the present species goes to for the winter is one of the innumerable things not yet known. Do they frequent the northern coast of Russia,—*i. e.* the land to the east of Norway,—or do they keep to the edge of the pack, in such situations as the surroundings are favourable? Certainly this is not the case with the portion of the pack-edge approached by us off Edge's Land, but there the edge was rotten, and the surroundings may therefore not have been favourable.

Brünnich's Guillemot, *Alca Bruennichi*, Dresser ('Birds of Europe'); Norwegian, "Alke."—The extremely small number of birds of this and the next species was one of the most noticeable features of this voyage. Two old Guillemots heard calling to their young at sea, lat. $71^{\circ} 21'$, on August 28th, were very probably of the common species. About half-a-dozen seen in the neighbourhood of Bear Island, on Sept. 1st, were probably of the present species. On Sept. 2nd one was seen; on the 3rd five or six were seen, one of which was a young bird; on the 8th, one; on the 10th, one, and young (perhaps two of each); on the 19th, a couple; on the 25th, one; 26th, one; 27th, two; 28th, several; on the 29th, a good many, including one with white throat; and one slightly grey, seen near Bear Island, may have been of either this or the common species, to which all seen subsequently probably belonged. These few stragglers formed a remarkable contrast to the millions in those regions during the summer.

Little Auk, *Mergulus alle*, Linn.; Norwegian, "Alke-Konge."—Two or three dozen seen when off Bear Island, on Sept. 1st; on the 3rd and 4th, a few each day; on the 5th, off Edge's Land, we

saw two or three dozen. No others were seen until the 22nd, when I saw a single example in Recherche Bay; this specimen, which I secured, has the throat in a transition state between the black of summer and white of winter. On the 27th nine were seen at sea, about lat. $75^{\circ} 30'$. Not one young one of this species was seen. The same remark applies to this species as to the last named.

Northern Puffin, *Fratercula glacialis*, Leach; Norwegian colloquial, "Lun" (Dictionary, "Lunde").—Some Puffins seen immediately north of the Norwegian coast on August 27th were probably of the common species, as also a couple seen the next day. A solitary Puffin seen on the 31st, in about lat. 74° , may very possibly have been of the Northern species. On the evening of Sept. 2nd, in about lat. 75° , one that was apparently charmed by our skipper's accordion was without doubt a Northern Puffin. A single bird seen off the ice surrounding Edge's Land on Sept. 5th; after that we saw one on the 8th, two or three on the 10th, one on the 11th, one on the 15th, two shot on the 16th; and on the 19th several birds in the distance were probably of this species.

NOTES AND QUERIES.

American Ornithologists' Union.—The founding of an American Ornithologists' Union, during the past autumn, must be recorded as an important event in the progress of ornithological science. On the 26th of September last about twenty of the most prominent ornithologists of the United States and Canada assembled in the Library of the American Museum of Natural History at Central Park, New York, and founded a society to be known as the American Ornithologists' Union. A constitution was adopted, and the following officers were elected:—President, Mr. J. A. Allen; Vice-Presidents, Dr. Elliott Coues and Mr. Robert Ridgway; Secretary and Treasurer, Dr. C. Hart Merriam. The founders of the Union are:—Messrs. J. A. Allen (Cambridge, Mass.), C. Aldrich, Prof. S. F. Baird, H. B. Bailey, C. F. Batchelder, Capt. C. E. Bendire, E. P. Bicknell, Wm. Brewster, Nathan Clifford Brown, Montague Chamberlain, Chas. B. Cory, Dr. Elliott Coues, D. G. Elliot, Dr. A. K. Fisher, Dr. J. B. Holder, Thomas McIlwraith, Dr. Edgar A. Mearns, Dr. C. Hart Merriam, Dr. D. W. Prentiss, H. A. Purdie, Robert Ridgway, Dr. R. W. Shufeldt, and Dr. J. M. Wheaton. The constitution states that:—"The Union shall consist of Active, Foreign, Corresponding, and Associate members. Active

members shall be residents of the United States or Canada, and shall be limited to fifty in number. Foreign members shall be non-residents of the United States or Canada, and shall be limited to twenty-five in number. Corresponding members may be natives of any country, and shall be limited to one hundred in number. Associate members shall be residents of the United States or Canada, and shall not be limited in number." The Union is intended to be a somewhat exclusive body, and the position of Active membership is the highest honour to which an American ornithologist can attain. The Associate members are selected from the large amateur element, represented in all parts of North America, and constitute the body from which Active members are hereafter to be chosen. In addition to the founders already mentioned, the following named gentlemen were elected to Active membership:—W. B. Barrows, Prof. F. E. C. Beal, L. Belding, J. S. Cooper, Ruthven Deane, S. A. Forbes, Prof. Theo. N. Gill, Col. N. S. Goss, Geo. Bird Grinnell, H. W. Henshaw, J. Amory Jeffries, F. C. King, J. K. Kidder, Dr. F. W. Langdon, Geo. N. Lawrence, Newbold T. Lawrence, Dr. J. C. Merrill, E. W. Nelson, Herr Nehrling, T. S. Roberts, J. H. Sage, W. E. Saunders, G. B. Sennett, and W. E. D. Scott. The Council of the Union consists of the officers, *ex officio*, and of Prof. S. F. Baird, Mr. G. N. Lawrence, Mr. Wm. Brewster, Mr. H. W. Henshaw, and Mr. Montague Chamberlain. Six committees were appointed as follows:—(1) *The Classification and Nomenclature of North American Birds*: Messrs. Ridgway, Allen, Brewster, Henshaw, Coues. (2) *The Migration of Birds*: Messrs. Merriam, Brown, Purdie, Wheaton, Chamberlain, Grinnell, Henshaw, Cory, Merrill, Fisher, Mearns, McIlwraith. (3) *Avian Anatomy*: Messrs. Shufeldt, Merriam, Jeffries, Coues. (4) *Oology*: Messrs. Bendire, Bailey, Brewster, Ridgway, Merrill. (5) *Faunal Areas*: Messrs. Allen, Ridgway, Bicknell, Merriam, Fisher, Mearns. (6) *Eligibility or Ineligibility of the English House Sparrow in North America*: Messrs. Holder, Purdie, Chamberlain, Brown, Bicknell. The following eminent naturalists were elected Foreign members:—T. H. Huxley, Alfred Russel Wallace, W. K. Parker, J. B. Barboza du Bocage, H. E. Dresser, Otto Finsch, H. H. Giglioli, Gustav Hartlaub, Allan O. Hume, Alfred Newton, August von Pelzeln, Tommaso Salvadori, Osbert Salvin, P. L. Sclater, R. B. Sharpe, J. H. Gurney, sen., John Gundlach, H. Schlegel, J. Cabanis, Dr. Krause, Alphonse Milne-Edwards. About twenty Corresponding and eighty Associate Members were also elected. Amongst the Corresponding Members are Count von Berlepsch, Capt. Blakiston, Messrs. J. A. Harvie Brown, Walter Buller, Robert Collett, Pere A. David, J. J. Dalgleish, Percy E. Freke, F. D. Godman, A. Grandidier, J. H. Gurney, jun., J. E. Harting, J. D. Ogilvy, Dr. E. Oustalet, Prof. Palmen, W. B. Pryer, Howard Saunders, Henry Seebohm, and H. T. Wharton. It was evident from the first that this convention was not called in the interest of any faction,

and the harmony and evident good will that characterised all its actions and deliberations proved the unity of purpose of its founders. While the revision of the classification and nomenclature of North American birds is one of the avowed objects of the organization, it is equally certain that much other good will be accomplished by it. Indeed it is safe to say that the founding of the American Ornithologists' Union marks the beginning of a new era in the progress of Ornithology in this country, and that it will give an impetus to this science such as it has not received since the publication of Prof. Baird's great work in 1859.

Game killed on the Railway.—In continuation of my remarks hereon (Zool. 1883, p. 259), I may add that I have ascertained from two intelligent engine-drivers that the destruction of game during the year on some lines—*e.g.* the Glasgow and South-Western—must be very considerable. Mr. Graham tells me that on Sept. 30th he and his fireman secured a brace of hares, and that he has procured both hares and rabbits on various occasions. The hare seems to lose his head entirely when on the line, and will course two miles before the engine rather than turn. When, however, the body of the engine is rushing over it, the hare is sure to make a bolt right or left, and is usually run over by a wheel. Hares are killed chiefly in the early morning. Mr. Graham has often knocked down part of a covey of Partridges with his locomotive, and tells me that they lie close to the line until the train is near, when they rise in alarm close to the engine. Mr. Sharpe independently confirms the foregoing, but tells me that the plate-layers pick up most of the game, as under existing regulations the old custom of stopping a goods train to pick up a prize has been almost put a stop to. Mr. Sharpe says that young Partridges suffer most; they are fond of the railway-line,—collecting grains of gravel there, as he believes,—and are much exposed to danger. Quite recently four were knocked down out of a covey, not many miles from Carlisle. Other victims, within Mr. Sharpe's experience, have been Pheasants, and also Tawny Owls, one of which was found alive in the ash-pan of a locomotive. Amongst mammals, the chief victims are house cats and brown rats. I knew myself of a number of water rats being run over near Oxford, when crossing the line from one ditch to another.—H. A. MACPHERSON (Carlisle).

An Ornithologist's Sling.—I have invented an elastic sling with a pistol grip, which has several times contested favourably with the bow and arrow. It is about seven inches long by four inches wide, and weighs about five ounces. The skilful use of this weapon (anti-bow) is so easily learned that it surprises me that it is not used in the place of the bow. One of these anti-bows will send a No. 3 buckshot 400 yards (measured on a target range for Winchester rifles), about as far as an arrow has ever been shot from a bow. I have killed three bats in succession at dusk while they

were flying swiftly, not going more than a rod at any time before turning off in a sharp angle. This irregular flight rendered them very difficult targets to hit, and taking aim and shooting were almost instantaneous. I have obtained 190 species of birds with the anti-bow, including, besides Insectores, partridges, quail, and duck, and several snipe and woodcock.—ANTI-BOW (Brooklyn).—‘*Forest and Stream.*’

- BIRDS.

Variation in Nests of Common Birds: singular Nests taken in Kent.—In the spring of the present year I amused myself by collecting, for comparison, some of the nests of our common birds; and I was struck at the great variation which they exhibited both in form, and in the materials used in their construction. As I am not aware that special attention has been directed to the frequency of this variability, it may be interesting to mention a few instances. I took a large nest of the Robin, over five inches in diameter, from ivy upon the front of a house; this nest is strongly built of fine roots, bass, coarse hair, a few withered grasses, and a little moss, firmly interwoven; the back wall of the nest is about two inches in thickness, gradually diminishing towards the front, which is covered with dead oak-leaves, giving it the appearance of a Nightingale's nest; it contains six eggs, almost uniform in tint, the large end of a pale russet tint, growing gradually paler towards the smaller end; no distinct mottling is visible, but two or three isolated dark brown points can be seen with a lens on some of the eggs. This nest forms a marked contrast to one which I took two or three years ago out of a hole in an apple-tree; the latter is semicircular in form, and is composed of moss and fine root-fibre, lined with hair, fibre, and two or three small pieces of withered grass. The Nightingale was very common during the present year, but I only twice stumbled across the nests; in both cases they were normal in structure and position, but last year I found the nest built fully eighteen inches from the ground in a matted bush of furze and bramble; about eight years ago I saw a nest without eggs in a stunted hawthorn, nearly two feet from the ground. I obtained one nest of the Willow Wren in which the dome-like covering was wholly absent; the nest was in a most singular position, being placed upon the earth under a gooseberry bush in an orchard, one of the rough clods somewhat overhanging it, and thus rendering the completion of the nest unnecessary. This nest is composed almost entirely of slender dry grasses, thickly lined inside with dark soft feathers; it contains four eggs, which are unusually well marked with large red-brown spots. I have noticed that where eggs are more than usually exposed to light they are always better marked than those in less exposed situations, while those laid in holes are frequently colourless. The *Strigidæ*, *Cinclidæ*, *Hirundinidæ*, *Cypselidæ*, *Picidæ*, and *Alcedinidæ* may be cited as examples of the latter

class, though by no means the only ones, whilst the *Columbidae* may be regarded as exceptions to the general rule, although *Columba anas* frequently deposits its eggs in holes of pollards and rabbit-burrows. Amongst the British *Hirundinidae*, as is well known, the Swallow alone has spotted eggs, and these I have on several occasions noticed to be more heavily marked when the light had direct access to the top of the nest than when it was built under the rafters of darkened barns or deep down in chimneys. I can, however, offer no suggestion in explanation of these apparently rapidly acquired modifications in the same species, though it is possible that the absence of colour in the eggs of birds which habitually breed in the dark—as *Cotyle riparia*—may have been acquired to render them more conspicuous to the parent birds, and the general use of white feathers by the Sand Martin may be ascribed to the same cause. I took a cup-shaped nest, apparently referable to the Spotted Flycatcher in a high hawthorn-hedge bounding a private garden. This nest is formed of slender roots, moss, and fine bleached grass-stems, compacted with spider's web, and is lined internally—but most thickly towards the bottom—with reddish hair, amongst which a few coarse black horse-hairs are twisted; the cavity is unusually deep; the nest contains only two eggs, rather large for the species, of a pale green tint, sparsely spotted with russet, excepting at the large end, where they become denser and form a mottled patch; a similar egg was lent to me for illustration by Mr. Bidwell. Excepting in strength and size, I have observed little variation in the nests of the Greenfinch, the principal differences consisting, so far as I have seen, in the presence or absence of wool, the substitution of fine fibre for hair in the lining, and the partial substitution of bleached grasses for twigs and coarse roots in the external structure. The eggs, however, vary much more, a clutch of five in one of my nests being zoned with dull blood-red or dark russet mottling, upon which are a few short darker red-brown linear markings. In four nests of the Chaffinch, taken during the present year, I observe little variation, excepting that one of them is thickly lined within with thistle-down, and a second has the wall on one side very narrow and adorned with a single very jaunty white feather; last year, however, I found a very aberrant nest, somewhat roughly constructed of roots and fibre, with very little adornment of moss and lichen, but a fair sprinkling of fine worsted; the interior is lined with thistle-down and hair, the latter being, as usual, most prominent. A large nest, undoubtedly of some species of Finch, was pointed out to me by a lady friend in a laurel-bush in her garden. This nest was deserted and contained only one egg, very similar to that of the Chaffinch; the structure is as large and strong as that of an old Greenfinch, and is formed of densely matted roots and fibre, a little moss, the flower-heads of various grasses, and a few stout twigs; towards the inside a little wool is introduced amongst the roots, and this again

appears at the bottom of the cup; the inner walls, however, are lined with a combination of a little wool, a quantity of black horse-hair and a twisted black feather, the quill of which projects from the centre of the margin. I have never seen a nest at all resembling it; although the egg would do fairly well for that of the Chaffinch, the nest is totally dissimilar. I took the nest on the 4th June, and it had then been deserted for about eight days. The nest of the Linnet is more variable than that of the Greenfinch. Of five nests which I took only one had any moss in its construction; this one is somewhat slightly built for the species, but the walls are strengthened with coarse straws, evidently selected from a dunghill; the second, excepting that it is not so deep, is not at all unlike a small nest of the Yellow Bunting; its construction is, however, decidedly firmer, and the grasses used in the walls are similar to what one usually sees in the nest of the Greater White-throat; the third nest is untidy, loosely put together, and has blackish straggling roots projecting from the sides; the fourth is unusually deep, and is formed of roots, fibre, and wool, with a few white hairs towards the interior; the fifth is a very ragged construction, formed of coarse bleached roots, lined with fine fibre and wool; no two of these nests therefore exhibit a similar aspect. Most nests which I have obtained of the Yellow Bunting have been largely made up of very coarse dead grasses, especially round the rim of the cup; but last year I found a nest with three eggs, at Box Hill, on the 12th August, from which this coarse edging was entirely absent, giving it somewhat the appearance of a large and very untidy nest of the Blackcap.—ARTHUR G. BUTLER (10, Avington Grove, Penge).

The Siskin in Ireland.—The statement of Thompson, that in Ireland the Siskin has only been noticed as an occasional winter visitant, requires to be corrected. Mr. Barrington found a Siskin's nest near Bray in 1866, and I am able to record other instances of its breeding in Ireland, noted as far back as 1855. At that time I was familiar with these birds, having shot some and sent them to be stuffed. On June 7th, 1856, I saw five undoubted Siskins by the Bride River, and my journal shows frequent notices of Siskins, in April, May, and June, especially in 1857, when I noted Siskins on April 3rd, 15th, 18th, 21st, 22nd, 26th, 28th, 29th, May 1st, 2nd, 3rd, 5th, 6th, 9th, 11th, 15th, 18th, 21st, June 12th. On the said 22nd April, 1857, I saw three pairs of Siskins, and discovered the nest of one pair by watching them; it was in an upper lateral branch of a Scotch fir on the outskirts of a plantation here. On the 28th April I climbed up to it, and while I did so both the Siskins came and hopped about on the tree, uttering cries of distress; they then forsook the nest, in which no eggs had been laid; it was almost entirely composed of moss, but was not lined at the time. Coming to the year 1882, on June 8th I was attracted by a Siskin singing on the wing, and saw three or more among the firs above this house. I saw two on June 17th and one on the 24th.

On July 2nd and 3rd I saw a family of five Siskins in my hill-plantation. This year (1883) Siskins frequented the grounds close to this house; I saw the male and female on June 30th and July 3rd, 8th and 9th. On the 3rd July I pointed out the male to the Rev. Mr. Flemyng, and on the 8th both birds were feeding for some time among the meadow herbage, about twenty yards from the table where I write, while I watched them through an opera-glass. On the 29th this pair of Siskins, evidently, appeared with their young ones, for I saw five, including young birds, flying about the haunts of the old pair. I have made special notes of the appearance of the Siskin here in the breeding season, having seen it mentioned in books of Natural History as a winter visitant: at the latter season it appears here in small flocks. Still it is not a bird that one may reckon on finding at all times, like the Goldfinch; it will disappear unaccountably, and when I begin to fear that it has forsaken the locality, it appears again as unexpectedly. Its eggs I have never taken. Of its habits in the breeding season I wrote in 1858 as follows:—"In April and May, 1857, Siskins were unusually common at Cappagh in the woods of fir, both on the low ground and on the hill-side; in fact, the woods were continually ringing with the song of this bird. You might hear it as it flew over the wood uttering its peculiar cry, half chirp, half song; at one time flying straight forward, as if to some destination, then turning and making a circuit, as if it did not know its own mind, or as if it were loth to descend from its joyous flight, then again darting off in a new direction, whilst its notes would gradually die away. Its every tone and movement is full of animation and delight, as if it were beside itself with pleasure: this is particularly the case in the nesting season, at which time I have seen the male flying slowly towards some topmost spray of a fir tree, pouring forth his delightful little warbling song, which very much resembles that of a Goldfinch, but is to my ears far sweeter. It very often sings when flying, but more frequently when perching on some fir-tree top; indeed the Siskin in spring seems more like a visitor from a happier world. On the 29th May, 1880, the late Professor Leith Adams, who was staying here, saw several Siskins. He remarked them particularly about the tall spruce and silver firs to the north of the garden, into which trees I saw the Siskins fly that I observed so often early in July last.—R. J. USSHER (Cappagh, Co. Waterford).

Siskin in Co. Down.—I recollect, at least twice, getting young Siskins just taken from the nest and rearing them. I was then living in the County Down, and got the birds from Creighton, the gamekeeper at Tollymore Park, an intelligent and keen observer of birds. I also remember seeing the birds with him, and which he told me he had reared himself from the nest. I never found the nests myself. This was probably about the year 1858.—W. E. L'ESTRANGE DUFFIN (Whitechurch House, Co. Waterford).

Common Scoter inland.—It may interest some of your Lancashire readers to know that on October 25th I received from one of our game-keepers in that county a very fine old male Scoter, *Ædemia nigra*, minus one foot, with a note stating that the bird was "caught" probably in a "pantle," or snipe-snare, on the mere in Tarleton, on 22nd inst. I do not know if this species is as common on the Lancashire coast as in other parts of England; the so-called "mere" is not far from Southport and the estuary of the Ribble, but by the sending of this bird to me it seems that it is considered a rarity even at the short distance that Tarleton is from the tidal waters.—LILFORD (Lilford Hall, Oundle, October 26, 1883).

Rare Birds in Sussex.—A Spotted Redshank, *Totanus fuscus*, was shot in August, in the Winchelsea Marshes, and is now in the possession of Mr. Thomas Sorrell, of Hastings. The bird is in the autumn plumage so well figured in Dresser's 'Birds of Europe.' Mr. F. Bucknill informs me that, when shooting in the Nook at Rye on Sept. 3rd, he saw three birds which were quite unknown to him; from his description, they could have been nothing else but Black-winged Stilts, *Himantopus candidus*. I know the species well, having obtained specimens in Egypt; still great doubt remains in my mind as to the identity of the birds in question. The Spotted Redshank has before now been erroneously recorded as the Stilt (Zool. 1872, p. 3864), and the fact of *Totanus fuscus* having been—as stated above—obtained in the Winchelsea Level, in the month of August, makes their identity, I fancy, still more doubtful.—THOMAS PARKIN (Halton, Hastings).

[The birds may have been Avocets. Both being black and white, with long legs, Avocets and Stilts may be easily confounded at a distance.—ED.]

Rare Birds in Cornwall and Scilly.—There are at present in the hands of our taxidermist, Mr. W. H. Vingoe, for preservation, a specimen of Bartram's Sandpiper, killed at St. Keverne, near the Lizard, in October last; also a Pectoral Sandpiper, shot at Scilly; a Spoonbill, a bird of the year, procured on St. Germans River, near Plymouth; a Hawfinch from Scilly, where it is exceedingly rare, there being no cover for it.—THOMAS CORNISH (Penzance).

[We should be glad of further information respecting the American Sandpipers.—ED.]

Late nesting of the Nightjar.—I have never found eggs of this species quite so late in the season as the dates mentioned (pp. 380, 429), but I have several times taken them in August, from the 6th to the 9th, and on one occasion I found two quite fresh-laid eggs on the 12th, whilst those taken on the earlier dates were more or less incubated. In my old ramblings for insects about the heaths and woods of this neighbourhood there is no bird with which I was more familiar than the Nightjar, and

many a time have I watched its feigned lameness in trying to lure me from its eggs or young, which latter are, I think, some of the oddest little things to behold, with their enormous mouths, large eyes, and ruffled plumage, as they squat on the ground, as helpless as they are peculiar in appearance. It has often struck me that a bird like the Nightjar, which nests on the bare ground, and frequently in an open space where no protection seems to offer itself, must have many foes against which, both directly and indirectly, to contend—the feet of passing men or grazing animals, not to mention rats, stoats, and a host of other enemies—from which a species nesting in a tree is comparatively secure; and yet this very exposure is often the surest safeguard, especially when under the watchful eye of the parent bird. I recollect on one occasion, in the dusk of evening, seeing a Nightjar buffeting its wings in the face of a cow that was quietly feeding upon the heaths, and at first imagined that the bird was feeding upon the moths which had been roused by the movements of the quadruped, but on approaching more closely I saw the cow turn from its proposed course, and the bird immediately left it. Next evening I went to the same place, and found two eggs of the Nightjar within a few feet of the spot where the cow had turned out of its way. The eggs I left, and in due time they were hatched, but when the young were only a few days old they altogether disappeared from the place, and were, as I supposed, either taken or destroyed. About a week after, in passing the same place, imagine my surprise at seeing the old bird act its feigned lameness, and finding what I suppose were the same young ones, considerably grown, just where the eggs had formerly been. Of course I am not sure they were the same, but it seemed probable; and if they were, how did the parent bird remove them from one place to another? Having no nest, one bare spot upon the heath would answer their purpose as well as another, and yet it seemed strange they should return to their birth-place.—G. B. CORBIN (Ringwood, Hants).

Shoveller breeding in Suffolk.—At least one brood of young Shovellers were reared last spring in the marshes near Leiston, where there is a large bed of reeds. My brother saw a female bird with five young ones, “flyers,” on June 26th. They were swimming in a wide ditch close to the above-mentioned reed-bed. As he has also seen several males about, there may possibly have been more than one brood hatched out.—G. T. ROPE (Blaxhall, Suffolk).

The Plumage of the young Kestrel.—It does not seem to be generally known that the sexes of the young of the Kestrel, *Tinnunculus alaudarius*, can be distinguished in the first plumage, since a reference to the standard works on British Birds by Montagu, Jenyns, Selby, Macgillivray (‘Raptorial Birds’), and Yarrell (4th edition), would lead one to suppose that the young of both sexes resemble the adult female until after their first winter. Sir

W. Jardine is the only author who appears to have noticed any dissimilarity in the sexes of the young. That author says (Brit. Birds, vol. i. p. 146), "In the young males the head and tail have a slight greyish tinge, and the bars are more indistinct or clouded on the latter"; but here he errs in stating that the head shows any tinge of grey, for the colour of the head is similar in both sexes. My brother, Mr. O. V. Aplin, and I have observed that the sexes of young Kestrels can be distinguished at a glance directly the feathers of the tail begin to sprout. In the young female the tail resembles that of the adult of the same sex, the ground colour being rufous, with the dark bars regular, complete, and comparatively broad, while in the young male the tail from its first appearance is decidedly blue; the dark markings are much narrower than in the female, and form only irregular and incomplete bars. The blue of the tail is not, however, so pure as in the adult male, being suffused in the terminal half with rufous—more noticeable on the inner webs of the feathers. Another mark of distinction is the markings upon the shoulders and upper part of the wings, which are less distinct and regular than in the female. The rufous ground colour, also, including the tinge on the tail, is of a different red, and resembles that of the adult male. In none of the works above mentioned do I find it stated that the young, before they assume feathers, are covered with a bluish grey colour.—F. C. APLIN (Bodicote, Oxon).

Notes from County Cork.—Under the description given by Yarrell (4th edition) of the Long-tailed Titmouse, *Acredula caudata*, we read, "In Ireland it would seem to have been observed in some thirteen counties only, and in none to the south-west of Galway and Tipperary." This is not strictly correct. Although I have not myself seen this Titmouse outside Myross Wood,—from an eminence whence American steamers can be seen steaming past the south-west coast,—there are numerous representatives of the kind among the birds frequenting the place, and I gather from friends that they have seen it in different localities in South-West Cork. When out shooting pigeons (*Columba livia*) on October 10th, as we were rowing under the ocean cliffs east of Glandore Harbour, I was surprised to see a Kingfisher fly from the foot of the rocks and skim over the great waves rolling in from the Atlantic. Among the birds observed in our excursion were two Peregrine Falcons high in the air over a lofty cliff called "Fil-na-Shuk,"—i. e. the Hawk's Cliff,—and very appropriately, as it is nearly always frequented by hawks, generally Kestrels. Two Choughs were also flying about over the same cliff, now and again making sudden drops and uttering their "chuf, chuf." As our boat neared some rocks we startled two Oystercatchers, *Hamatopus ostralegus*. Gulls were about in considerable numbers, and we met with Curlews, *Numenius arquata*, all along the shore. Nine or ten Shags, *Phalacrocorax graculus*, including a good many young,

were noticed on a rocky islet. A single Whimbrel, *Numenius phaeopus*, was seen feeding on the rocks. Making for a famous pigeon-cave in a break of the rock-bound coast, called Tralong Bay, another Kingfisher, a very handsome one, was descried, and I was anxious to secure it, but it completely baffled us. Our boatman called it a "Wood-picker," and every now and then, in the course of our unsuccessful chase, would ask, "Is the Wood-picker a skilful bird, sir?" By "skilful" he explained that he meant clever at concealing itself, like a Snipe. Our bird probably betook itself to a hole in the rocks, a usual expedient of the Kingfisher. Arrived at the pigeon-cave we put fifteen or twenty pigeons on the wing, of which we bagged not more than five. We then visited another cave, also reputed to be well stocked with pigeons. We found but one bird here, a disappointment somewhat made up for by an exploration of the cavity in which we found ourselves. The cave-tunnel runs in fully a hundred yards under the ground till it meets a vertical shaft bringing down the light of day to a boiling vertex, where the inrush of the sea finds its onward progress checked. In stormy weather the furious agitation of the waters is said to furnish a grand and impressive spectacle to an observer venturous enough to watch the scene of turmoil down the shaft. Sea-spleenwort, *Asplenium marinum*, grows on the upper part of the cave's sides towards the mouth, completely lining the rock, where fresh water was trickling down in the roof. I saw the first Redwing this year on October 5th, flying over a wood in company with four Mistletoe Thrushes; the latter are very common just now; since the 5th I have seen fourteen or fifteen.—C. DONOVAN, JUN. (Myross Wood Leap, Co. Cork).

Early appearance of Wigeon.—Apropos of a note on this subject (p. 424), the following may be interesting;—The 1st of August in this neighbourhood is looked forward to with some degree of interest by the sporting community, whose chief object is to slaughter the numerous wild-fowl which frequent the river, but whose longings are happily held in check by the Wild Birds Protection Act till the above date. A friend of mine informed me that in the early morning of the first day's shooting he heard what he thought was the distant note of Wigeon passing high overhead; and this supposition was subsequently confirmed, for in the evening of the 4th or 5th August he saw two Wigeon killed out of a flock of three. Last season I saw several Wigeon which had been killed on the river exposed for sale in the first week of September, which I thought early for the species so far south. Whilst on the subject of the appearance of Wigeon in summer, I may state that in June, 1880, a cow-boy came to inform me that in driving his cows near the river he had on several occasions seen a very handsome duck fly out of the rushes, and had tried to kill it with his catapult. Seeing a male Wigeon in a case, he pointed to it, and said "That is the sort of duck I mean," about which, of course, I thought he was mistaken; but not

many days after he brought me a rather small Wigeon, which he said he had killed with the before-mentioned catapult. It was a male, in rather bright plumage, but thin and meagre in body, and looking very much as if it had been on "short commons." I concluded that it had been injured, and was unable to follow its companions northward at the proper time, and consequently had skulked about and obtained a precarious livelihood amongst the rushes at the river's edge, although it could undoubtedly fly, but possibly not a long distance. I did not, and do not, for a moment suppose that this species ever breeds in the Avon, although a gentleman told me a few years ago that eggs of the Wigeon had been taken in Dorset, on the banks of the Stour; but on looking through his entomological collection I saw several species of moths—of extreme rarity in Great Britain—*said* to have been taken in the same neighbourhood; I suspect therefore that, as the moths originated from Southern Europe, the Wigeon's eggs probably came from the opposite direction.—G. B. CORBIN (Ringwood, Hants).

Food of the Carrion Crow and Magpie.—An old disused bridle-gate standing near one corner of Clattercutt Reservoir has this season served as a feeding spot for a pair of Carrion Crows, which reared their young in a tall elm on one side of the pool. One evening in June, after the grass was cut, I found strewn round it the remains of several toads and frogs, and of one partly fledged nestling finch, also a number of broken shells of the eggs of the Wild Duck and Partridge. The state the gate was in showed that it was a much frequented perch, and a tell-tale wing-feather would have named the robber even if he had not hurriedly left an adjacent tree at my approach, and with loud croaks expressed his displeasure at my intrusion on his banquetting hall. I have always tried to defend this fine bird, and was sorry to find such ample proof of its destructive habits. Only a few days ago (October, 1883) I counted thirty-two Crows in a stubble-field close to this village, and considering their abundance in the district, it is only a wonder that any game or wildfowl can rear their young at all. As an additional illustration of the voracity of the Magpie to that given by Mr. Gurney (p. 355), I may mention that during severe weather in December, some years ago, I was one morning shooting Fieldfares as they came to feed in the thorn-bushes, and hearing a loud screaming from the adjoining fallow, I looked over the hedge, and saw a Magpie repeatedly pouncing upon some bird on the ground in the middle of the field, and which screamed pitifully at each swoop. The Magpie was off directly, and going to pick up the victim I found that it was a Fieldfare, with a broken wing, and which would no doubt have been soon despatched in its helpless condition.—OLIVER V. APLIN (Great Bourton, near Banbury).

Gulls in the Watershed of the Liffey.—During the winter half of the year four species of gulls spend a considerable part of their time inland.

The Black-headed Gulls, which in this district are not so common as the Herring and Common Gulls, I think I have only seen in company with one or other of the latter. Small flocks of the Common Gull, usually composed of half-a-dozen to a dozen birds, are very regular in the cold weather, winging their way to their chosen feeding grounds. They come in during frosty weather when it is also foggy. In such weather I have frequently heard their cries as they pass over Dublin, about sunrise, in the months of December and January. In the country around Lucan, in the Phoenix Park, and near Straffan, I have frequently observed them flying back in the direction of Dublin Bay towards evening. This species, in this district at any rate, prefers ploughed fields rather than grass-lands. Occasionally I have seen large flocks of them near here, generally soon after ploughing has commenced in October. The Herring Gull is the most numerous of the gulls that visit us, as well as the one that comes most frequently, and is consequently the best known by the dwellers in the country. When living at Lucan, a few years ago, I used often on frosty mornings to feel confident that I should see large flocks of these gulls in certain fields which they were partial to, and I was seldom disappointed. They used to make their first appearance for the season—just as they do here now—as soon as ploughing had begun. How they knew when the plough had commenced to turn up worms for them has always been a mystery to me. I never could discover where any solitary individuals or small flocks came first to spy out and report on the matter; but doubtless the same sort of instinct that brings the Kittiwakes back to Lambay Island, with extraordinary regularity, the last week of May, directs with similar exactness the movements of the Herring Gulls. In the hard weather, when ploughing is mostly over, the flocks of Herring Gulls frequent persistently, morning after morning, the same favourite meadows or pastures, and yet do not visit some adjacent fields. At times they wander a good deal throughout the day. In mild weather their appearance inland is uncertain; sometimes none are to be seen for a number of weeks, and then they unaccountably reappear. As an instance of this, I may mention that a note in my diary, dated February 24th, 1878, records the appearance of a large flock of Herring Gulls on that morning at Esker, near Lucan, after they had been absent for several weeks. The morning was fine and bright, after a rainy night. A return of frost in the early part of the year almost invariably brings them up country again. I have rarely seen them returning to the coast in the evening, and have never yet observed them flying inland in the morning, but I have once or twice remarked them to be in the fields as soon as it was light enough to see them. Whether they remain during the night I am not able to say, but I am inclined to think not. The other gull coming inland here, the Lesser Black-backed Gull, is curiously different in some of its habits from the last-named species, to which it is pretty closely allied.

I have only once observed it inland in the winter months. This was about the middle of November last year, when I saw several in a field near here in company with some Common Gulls; there was frost at the time. It is much less numerous than the other gulls, but may possibly occur more frequently here in winter. At any rate, it does not appear to be the usual habit of this bird to come inland here in winter to feed; in the spring, however, from about the first week of April until nearly the end of June, when one would expect these gulls to be at their nesting quarters, a pair or a single one in adult plumage may be seen almost every day flying up the Grand Canal, at no great height over it. I have seen them following the Canal at several places between here and Dublin, as well as in this neighbourhood, and have frequently watched them flying back seawards in the evening. At the same season a few of these gulls may also be seen frequenting the river in the city among the shipping, and I recollect having once in spring seen about a dozen—the greatest number I ever saw together—flying about over the Custom House Docks, and resting on the roofs of some adjacent sheds. Perhaps those we see here in the breeding season may be barren birds; but it is remarkable that the time one would expect them to be away at their breeding haunts is the only time we have them in the parts frequented by the Herring Gulls in the winter. So far as my experience goes, the Lesser Black-backed Gull is at no time common on the Dublin coast. Once (on April 6th, 1879) I met with four near Malahide; they were flying northwards, following the shore-line, and were well within gunshot. They passed a group of Herring Gulls on the sands, and neither appeared to take any notice of the other; and on the 2nd June, in the same year, I watched for a long time a pair of these gulls sailing about in the air along with large numbers of Herring Gulls, on the east side of Lambay. I expect they were nesting there, and may have been put up from their nests by us, as were a great many Guillemots, Razorbills, Herring Gulls, and Puffins; but there was little likelihood of that point being settled in the too limited time at our disposal, for the Lesser Black-backed Gulls remain on the wing for a long time. They seem to be perpetually on the wing; I have rarely seen them alight. This is a point, too, in which these birds are strikingly different from the Herring Gulls, the latter spending most of their time, whether on the sands or in the fields, standing in large groups with a stately and dignified composure.—J. E. PALMER (Lyons Mills, Straffan, Co. Kildare).

White-tailed Eagle in South Lincolnshire.—On November 2nd an immature specimen of *Haliaëtus albicilla* was shot in South Lincolnshire. It is a male in dark plumage, with dark mottled tail. It was in good condition, but the maw was perfectly empty. The measurements are—total length from tip of bill to end of tail, 3 ft.; expanse of wings, 7 ft. 2 in.—J. CULLINGFORD (University Museum, Durham).

Notes on the Ornithology of Northamptonshire.—The first Woodcock of the season in this neighbourhood reported to me was seen by one of Lord Lyveden's gamekeepers on October 16th; since that date we have heard of several, but only seen one killed Nov. 8th. A Spotted Crake, *Crex porzana*, male, was shot near Thrapston, Oct. 23rd, by one of our gamekeepers, who told me that he had often seen these birds in our upper meadows without shooting at them, as he did not know that they were "fit to eat," or of any interest to us (*vide* p. 467). Is not the above an unusually late date for this species in a district where it is certainly not resident in the breeding season? A male Merlin, *Falco aesalon*, came up to one of our Tiercels who was "waiting on" over a piece of turnips near Titchmarsh, Oct. 24th, and appeared curious as to his views and intentions, circling round him for a few minutes; but as we sprung no Partridge, and the small birds kept close, the little hawk evidently thought the concern "not good enough," and sailed off to the southward to hunt on his own account. Since the last date we have seen and heard of several Merlins hereabouts. On Oct. 24th the first Water Rail, *Rallus aquaticus*, of this season, was shot by one of our gamekeepers in our upper meadows. The numbers of this species in this neighbourhood vary greatly in various seasons; but though we never met with, or heard of, a Water Rail's nest in this portion of the Nen valley, we have recently received information which leads us to believe that these birds do occasionally breed with us. On Oct. 26th, Mr. William Seale, a well-known London birdcatcher, who was staying here for catching common small birds as food for our Raptures, assured us that on this day he saw two Richard's Pipits, *Anthus Richardi*, near Thorpe Station, L.N.W. Railway. Seale is perfectly well acquainted with this species, of which he has taken more than one in his nets, and I have no doubt whatever as to his accuracy in this matter. This is the first occurrence of this species in this county that has come to my knowledge. A flock of some forty Siskins, *Chrysomitris spinus*, appeared amongst the alders on our river-bank, at a short distance from this house, during the week beginning Oct. 21st; seven of them were taken by the auceps above mentioned, and are now in our aviary. This is, in my experience, a very unusually early arrival of this species in this district. On Oct. 27th I received a letter from Sir Rainald Knightley, Bart., informing me that he and Lady Knightley had observed a Hoopoe, *Upupa epops*, at Fawsley, near Daventry, on Sept. 24th, 1878. On Oct. 30th, Mr. J. Eayrs, of Kettering, brought for my inspection a fine specimen of a young Cormorant, *Phalacrocorax carbo*, stuffed and maltreated in a glass-case by a local mangler of birds. This bird was killed near Brigstock early in September last. On the above mentioned day several Swallows, *Hirundo rustica*, were observed about Wadenhoe House by Mr. Hunt and Lieut.-Col. L. H. Irby. On November 1st the first Bramblings, *Fringilla montifringilla*, of this

season seen by us. As we have no beech-mast hereabouts this autumn we shall see very few Bramblings. We have had a small arrival of Snipes and Jack Snipes during the first week of November, also a few Teal, *Anas crecca*; and, as usual when the latter bird appears with us, a Falcon, *F. peregrinus*, haunting our Nen valley for some time past. Fieldfares appeared in force about Nov. 8th: previously to this date we had only observed a few stragglers of this species. About the above-mentioned day a very large flight of *bonâ fide* travelling Wood Pigeons, *Columba palumbus*, visited one of our oak plantations, but very soon took their departure. On Nov. 14th I am convinced that I heard the well-known "wail" of a Buzzard, *Buteo vulgaris*, high in air over Great Wadenhoe Wood, where I was shooting with Mr. Hunt and his party. This bird is now of exceedingly rare occurrence in our county, though formerly common enough. It is possible that the cry was produced by a Jay, of which there were many in the wood; but we have as yet had no immigration of this species, and I do not know where our home-bred Jays could have learned such a perfect imitation of the Buzzard's cry. However, on this possibility I must refer your readers to my "Notes on the Ornithology of Spain," in 'The Ibis' for April, 1866, p. 175.—LILFORD (Lilford Hall, Oundle, Northamptonshire, November 15, 1883).

Habits of the Little Grebe.—In 'The Zoologist' for November (p. 466) Lord Lilford describes the thrice-repeated voluntary flight of a Dabchick, *Podiceps fluvialis*, and adds that he "never before the above occurrence saw one rise and fly from thick covert, unpressed by a dog." It is a curious coincidence that, the very day after reading Lord Lilford's notes, I myself saw two Dabchicks rise and take wing, nearly, but not quite, simultaneously. While Snipe-shooting on the 3rd I had to follow the banks of a broad stream for some 400 yards in order to pass from one part of my beat to another, and, as I advanced, I saw at intervals what looked like the rise of a trout, sometimes close under the bank, sometimes in mid-stream. On coming to a point where I intended to diverge, I stopped for a moment on the bank of the stream, when up rose a Dabchick and flew up stream. I sent a cartridge of No. 11 after him; but fearing that this dust-shot would not kill him, I repeated it quickly, when a second Dabchick rose from the opposite bank and flew off. This is the first time that I ever saw a Dabchick on the wing, though my snipe-shooting years, I am sorry to say, extend through half a century. The bird I shot was one of the year.—W. OXENDEN HAMMOND (St. Alban's Court, Wingham, Kent).

Hybrids among Birds.—As instancing the interest now taken by bird-keepers in producing hybrids between our British Finches, I may observe that in the 'Live Stock Journal' of October 12th last a well-known exhibitor of cage-birds, Mr. T. Beasley, of Northampton, offers for sale four hybrids between the Goldfinch and Bullfinch, two hybrids between the

Bullfinch and Linnet, and one hybrid between the Linnet and Lesser Redpoll. These appear to be his surplus birds; probably he retains other examples. Mr. Scott, of Carlisle, tells me that at least three hybrids between the Goldfinch and Siskin are possessed by bird-fanciers; one of them was in his possession until a few weeks ago. The hybrid between the Lesser Redpoll and Bullfinch mentioned (p. 339) belongs to Mr. Scott, and was bred in the South of Scotland in 1881—not in 1882, as I supposed; it was hatched from a large series of eggs obtained from a male Redpoll and female Bullfinch, and was brought up by a female Canary. This bird is rather larger than the ordinary race of Lesser Redpoll, and in shape resembles a Bullfinch; the crown of the head, the throat, breast and under parts are of a prettily shaded pink; the occiput is dark grey; ear-coverts silvery grey; back ashy grey, streaked with dark brown; wing-coverts grey, tinted with red; the rump is white, tinged with pink; the tail and wing-quills are black; the flanks are streaked with black; the beak is horn-coloured at the base, black at the extremity. Mr. Scott has now two male Bullfinch and Goldfinch mules of his own rearing; he has also bred a hybrid between the Bullfinch and Greenfinch in confinement. The hybrids between the Bullfinch and Goldfinch are comparatively sober in colour during the first year, but become brighter in successive annual moults. A female of my own used to imitate the “pink, pink” of the Chaffinch very prettily: a cat slew her during my absence from home.—H. A. MACPHERSON (Carlisle).

Ring Ouzel in Suffolk.—While walking along the River Alde, near Snape Bridge, on October 18th, I saw a pair of Ring Ouzels, a scarce bird in this district. They were first seen on a bramble-bush, apparently feeding on the berries. Owing to their remarkable tameness, I was enabled to get very close to them, and to follow up and watch them for some time. In April, 1880, a pair of these birds frequented for some time a piece of furze-covered ground near Leiston, in this county.—G. T. ROPE (Blaxhall, Suffolk).

Partridges and Pheasants in the Scilly Isles.—Partridges have been repeatedly introduced in the Western Islands, but have, as repeatedly, all made their way to St. Martius, the easternmost island nearest the mainland, and from thence have disappeared. Pheasants have, on the other hand, taken to the islands in a very kindly manner, but do not grow to any size.—THOMAS CORNISH (Penzance).

Osprey in County Durham.—On October 23rd I received another specimen of the Osprey, which was shot the previous day close to the city of Durham. This, like the last received, was a male, and a bird of the year. It weighed three pounds and a half, and measured twenty-two inches and a half in total length, and five feet seven inches in expanse of wings. In my report of the former one, in the last number of ‘The Zoologist,’

(p. 471), by some carelessness of mine, the expanse of wings is given as five feet, whereas it should have been five feet eight inches—just one inch longer than the one since obtained.—J. CULLINGFORD (University Museum, Durham).

Jack Snipe in Oxfordshire in Summer.—Mr. Wyatt, taxidermist, Banbury, recently showed me a Jack Snipe which he received about the end of July. It was brought in by a boy, who picked it up dead near Banbury. From a wound on its head it appeared to have struck against the telegraph-wires. It was in a very emaciated condition, and I fancy must have been an injured bird unable to migrate in spring.—OLIVER V. APLIN (Great Bourton, near Banbury).

FISHES.

Habits of the Pilchard.—In the latter part of the season for Pilchards (October and November) the shoals come from the eastward into St. Ives Bay, and pass thence off St. Just, round the Land's End, into Mount's Bay and the English Channel. A friend much interested in the Pilchard fisheries on the north coast of Cornwall (Mr. G. R. Pollard, of Bodieve, near Wade-bridge), writes me that the fish yearly arrive off the headlands and in the bays at and on either side of Trevose Head, near Padstow, coming *from* the westward, and that, after a pause there, they break up into small shoals and go *to* the westward. He curiously confirms an old belief in the following words:—"If ever so large a quantity of Pilchards appears to be in the bay, if it comes to thunder and lightning, they are never seen after." We attribute the same result to the firing of cannon at the batteries, and I have myself seen dynamite produce the effect. Mr. Pollard also sends the following exceedingly interesting and curious note:—"There is another curious thing connected with Pilchards—after they are in shoals they appear to keep to their own party. Eleven years since our 'huer,' seeing shoals of fish passing, put the master seiner on them; he directed the seine-boats to shoot the seine, but the men made a bungle of it, and got her fouled in getting over the side of the boat, and were so long about it that they only secured the end or latter portion of the shoal; but there happened to be another shoal just behind, and in bringing the net around they took in the leading part of the latter shoal as well. Now we had those fish in the seine from the 23rd to the 30th of October, and those two portions of different shoals never joined or mixed all the time; we could distinctly see two spots of colour, and on 'tucking' would sometimes get one and sometimes the other." Capt. W. Eddy, a mine-agent of great experience in West Cornwall, and also well acquainted with Pilchards and their fisheries, spent several years in managing some mines between Skibbereen and Baltimore, in the southern corner of Ireland, and overlooking the sea. Here he observed

that in every September, which is about six weeks to two months before we expect the large shoals from the north-west to strike our Cornish coast, vast quantities of Pilchards would be lying about amongst the numerous islands off the coast, accumulating apparently before their final start for the deep sea. The few fishermen in the neighbourhood were only interested in Herrings, and when, as they occasionally did, they caught a netful of these Pilchards, they threw them away as useless. This note, coupled with my former one (p. 431), points to two sources of Pilchard supply—one from the deep seas south and south-west of Scilly, which gives us our summer supply in the English Channel; and the other from the deep sea on to the south-west coast of Ireland, whence they furnish us with our winter supply in the Bristol Channel.—THOMAS CORNISH (Penzance).

On the occurrence of *Paralepis coregonoides* in Cornwall.—In the September number of 'The Zoologist' (p. 381) I gave an extract from the Journal of the late Mr. J. Couch, which rendered it almost certain that an example of *Paralepis coregonoides* had been captured in Cornwall on June 2nd, 1869, by Mr. Matthias Dunn. I have now the pleasure of affording conclusive proof of this, for on a recent visit to the new Natural History Museum, South Kensington, Dr. Günther showed me the identical specimen in spirit. The species therefore must be admitted among the rarer wanderers to the south coast of England.—FRANCIS DAY (Cheltenham).

Long-nosed Ray in the Ouse.—On November 16th, I noticed what I believe was a Long-nosed Ray, *Raia rostrata*, hanging up in a fish-monger's shop in Praed Street, Bayswater. It was remarkable that it was taken in the River Ouse, near Bedford, some sixty or seventy miles from the sea, and weighed 143½ lbs. According to Yarrell, it is a deep-water fish.—FRANCIS P. PASCOE (1, Burlington Road, W.).

On some newly observed Habits of *Ceratodus Forsteri*.—Of twelve specimens of this fish, procured by Mr. Morton in the Mary River, Queensland, one was taken in a net, the others were trapped by the blacks by being forced through a narrow passage in the river formed by a kind of brushwood. He noticed a curious circumstance as regards their habits. At the time of his visit a number of *Eucalyptus* trees were in full flower by the banks of the river, and as the blossoms dropped into the water they were eagerly seized and swallowed by these fish. The stomachs of each of the specimens captured were literally crammed with these flowers. An old resident told Mr. Morton that during June to August these fish go in pairs; that they make slight indentations in the muddy bottom in from six to ten feet of water, in which the spawn is deposited; that the male and female fish remain near the spawn, and are not then easily disturbed; that they frequent the same place every year, and that the spawn is frog-like. He had

taken it and hatched it in a tub of water, keeping the young alive for some weeks.—W. MACLEAY, Proc. Lin. Soc. New South Wales, July 17, 1883.

MOLLUSCA.

Slugs in Co. Waterford.—One of the most valuable consignments of living slugs that I have lately received, in furtherance of my desire to investigate the range and variation of this interesting group of mollusks, is one that was sent me on the 21st September last, by my friend Mr. J. H. Salter, of Newtown School, near Waterford, which included numerous interesting varieties, two of them new to Britain. All the specimens sent were collected in Co. Waterford, and within a couple of miles of the city of Waterford. The two new British varieties are *Testacella Maugei*, var. *viridans*, and *Arion ater*, var. *bicolor*. The *Testacella*, of which two specimens were sent, was collected in a nursery-garden, and I believe that this is the first occasion on which the species has been authoritatively and certainly placed on record for Ireland. It is quite true that it has been before reported, but there seems to have been room for doubt, and Thompson, in his Irish Catalogue, stated that he had not been able to verify the reports. Of course it had no doubt been imported from other stations. The variety *viridans*, to which three specimens belonged, is the one which, according to Morelet, is the prevalent form in Portugal, having the back a greenish brown or bronzy hue and the foot brilliant orange. I have also great pleasure in bringing forward, as an addition to the British list, the handsome variety *bicolor* of *Arion ater*, of which there were numerous specimens. These were collected in a very wet part of a small bog at Ballygunner. This variety is analogous to the black-and-white form which Mr. Ashford and I found near Trefriw and Bettws-y-Coed, and which I named *albolateralis*. My var. has the sides snow-white and the back deep shining black, the colours being sharply defined at their line of contact. In like manner, the delicate primrose-yellow of the sides and handsome chocolate-brown of the back of *bicolor* are sharply defined. In addition to these interesting forms, Mr. Salter's slugs included very deep (almost black) chocolate-brown examples of *Arion ater*, and a number of specimens of *Arion hortensis*. Of *Amalia marginata* there were several, and this species was of two forms of coloration, dark and light. The dark specimens, Mr. Salter tells me, were from a garden; the others from under stones by the river. The specimens of *Limax maximus* were of the typical form, and so were the numerous adult specimens of *L. flavus*, but one of the juvenile examples of this latter species was decidedly the blackest that Mr. Taylor or I ever saw, with scarcely a trace of the yellow ground visible. One specimen of *L. arborum* and numerous examples of *L. agrestis* complete the enumeration of the slugs sent; but I may also add that Mr. Salter included a large number of examples of *Zonites cellarius* and one of *Limnæa*

palustris. He has kindly promised to collect slugs for me in other Irish counties to which he has access, particularly in Kilkenny, and I should be pleased if residents or visitors in other parts of the kingdom would follow his example, and so expedite the task of working out in detail the variation and distribution of the various species throughout the counties of the British Isles.—WM. DENISON ROEBUCK (Sunny Bank, Leeds).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 1, 1883.—FRANK CRISP, Esq., Treasurer and Vice-President, in the chair.

Messrs. A. Hutton and T. E. Gunn were elected Fellows.

A donation to the Society of several interesting letters of Linnæus (1736—1769), addressed to G. D. Ehret, F.R.S., an eminent botanical artist of the last century, was announced by the Chairman, and an unanimous vote of thanks thereupon accorded to the Misses Grover and Mr. Charles Ehret Grover for their valuable donation.

Mr. Crisp drew attention to specimens, in fluid medium, of *Limnocoedium Sowerbii*, as illustrative of Mr. P. Squire's method of preserving delicate *Medusæ*.

Mr. W. Fawcett exhibited live specimens of *Testacella Maugei*, obtained in Dorsetshire by Mr. J. C. Mansel Pleydell, and supposed to be indigenous to that county. Mr. Fawcett asked for information on its distribution and habits, the other species found in the British Isles (*T. haliotideæ*) being distributed from the Canary Islands to France, but said to be only naturalised in the South-West of England and South of Ireland; while *T. Maugei*, with much the same range abroad, and reported frequently as being found at Clifton, was not considered to be even naturalised, it was asked why both species should not be considered indigenous. With regard to the habits of this shell-slug, Mr. Gwyn Jeffreys speaks of its rivalling the tiger, snake, and shark in its ferocity and cunning in search of earthworms.

A paper was read "On the changes in the Flora and Fauna of New Zealand," by Dr. S. N. Curl, in which he dealt more particularly with the plants, but remarks on the native Black Rat being destroyed by the imported Brown Rat, and to the gradual disappearance of Lizards and Pigeons.—J. MURIE.

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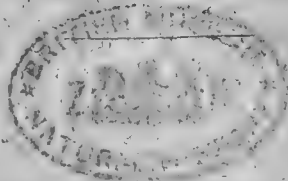
NATURAL HISTORY.

EDITED BY

J. E. HARTING, F.L.S., F.Z.S.

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

DELECTANDO PARITERQUE MONENDO.



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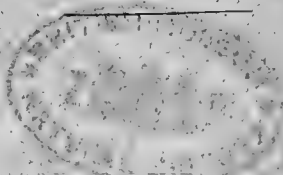
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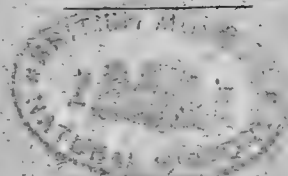
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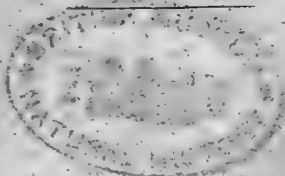
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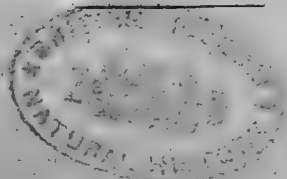
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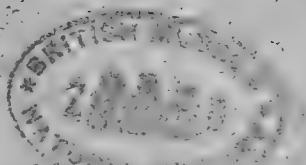
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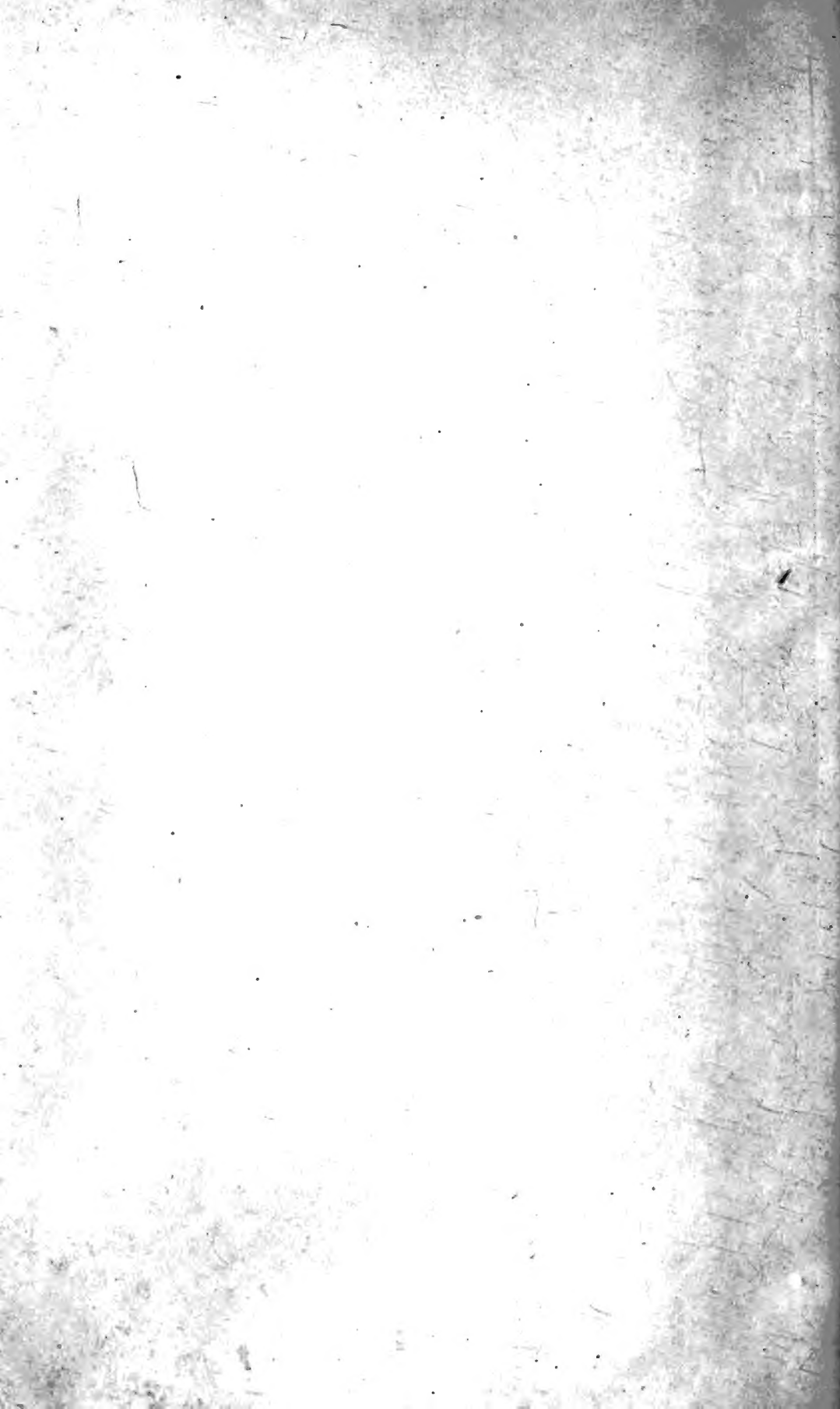
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